

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Special Features This Month

Building Plans

Modern Suburban Homes

Small Brick Veneered Church

Up-to-Date Dairy Farm Building

Practical Carpentry

Present Cost of Building

Standard Mill Construction

Handicraft Furniture Designs

Modern Methods

Modern Paints and Painting

Brick Masonry Construction

Novel Concrete Building Method

The Radiant Star of Furnace Perfection is the *Front Rank* *Steel Furnace*



ABSOLUTELY GASTIGHT

Because Front Rank Furnaces are made of steel where iron has hitherto been used, they are absolutely free from all dangers of leaking gas. Directly cast iron furnaces get red hot, the carbon monoxide soaks right through. In steel this is utterly impossible no matter what degree of heat may be attained. Read what Prof. Woodward of Washington University says on page ten of our catalog about this danger.

BURNS ANY FUEL

The economy feature of any furnace is determined by what kind of fuel it will burn. That's why Front Rank Furnaces excel. Any kind of fuel can be burnt with equal success. Radiators are large—more than three times the capacity of the smoke pipe, in fact, so even with the dirtiest coal they cannot choke up. Any person who has had experience with heaters can understand what a radical improvement this means. Fully 90 per cent of other furnaces continually give trouble in this quarter.

PERFECT COMBUSTION

Combustion in the Front Rank Furnace is positive and perfect. Installed right in the beginning, it can't very well be otherwise. The fire pot proper is lined with genuine fire clay tiling. Apart from increasing the durability to a very great extent it becomes so intensely hot as to cause perfect combustion. The degree of combustion would not be possible in unlined fire pots because the cold air from the outside chills the metal against which the fire lies.

NO DIRECT DRAFT

Another reason why Front Rank Furnaces have no equal on earth is because they have no direct draft to warp out of place and let the heat escape up the chimney. The principle eliminates this entirely. In the Front Rank Furnace the products of combustion have to pass through two radiators and then the dust box before making their exit through the chimney.

Thus, for every ounce of fuel consumed you get a greater percentage of heat than in any other furnace made.

PERFECTION OF 20 YEARS STUDY

The whole proposition is the result of 20 years of improvement. Nothing is experimental about the Front Rank Furnace. Every point that has made it the standard of the world is exclusive and has been embodied because of its proven merit.

No need to take our word for it. Ask any man who knows good stoves. For sense and practicability, durability and safety, Front Rank Furnaces are, as they have been for two decades, without an equal.

SEND FOR FREE CATALOG

Send for our latest heating catalog. Contains valuable heating information and tells all about the construction of the Front Rank Furnace, or let us know just what your requirements are. Estimates are quite free. Write today.

Haynes-Langenberg Mfg. Co.

4045-7 Forest Park Boulevard

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ST. LOUIS, MO.

THE "LITTLE SHAVER" FLOOR SCRAPER

Sold to
You at **FACTORY PRICES**

It will pay you to write us this month, as we are positively selling at factory prices

We are going to move five hundred scrapers the next few months and your inquiry at this time will not only save you money, but get you the best floor scraper on the market. Write us.

**INTER-STATE EQUIPMENT
& ENGINEERING CO.**

OLD COLONY BLDG.

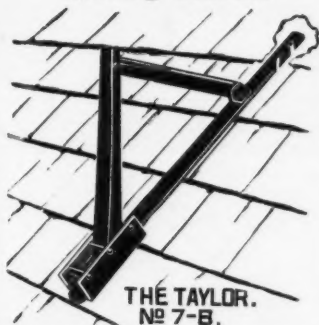
CHICAGO, ILL.

**Write Us
Now—
Don't Wait**



CHEAPER, STRONGER, LAST LONGER THAN WOODEN BRACKETS

Roofing Bracket



THE TAYLOR.
No 7-B.

Adjustable to any pitch roof; shingles laid over bracket, which is removed without leaving nail holes exposed. Made entirely of steel; folds, when not in use.

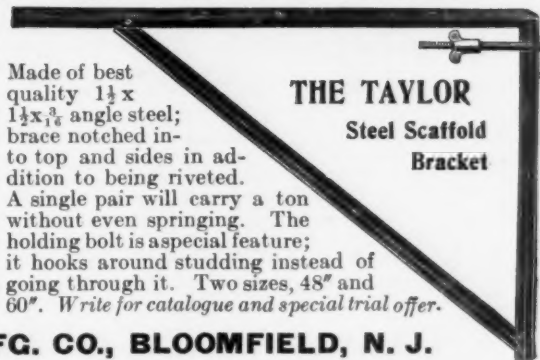
A single bracket of this style has held six men balanced on a hemlock plank—total weight 1002 lbs. This seems incredible, but a test will prove it.

Agents Wanted—A good proposition for men who will agree to canvass thoroughly.

Made of best quality $1\frac{1}{2}$ x $1\frac{1}{2}$ x $\frac{3}{4}$ angle steel; brace notched in to top and sides in addition to being riveted.

A single pair will carry a ton without even springing. The holding bolt is a special feature; it hooks around studding instead of going through it. Two sizes, 48" and 60". Write for catalogue and special trial offer.

THE TAYLOR
Steel Scaffold
Bracket

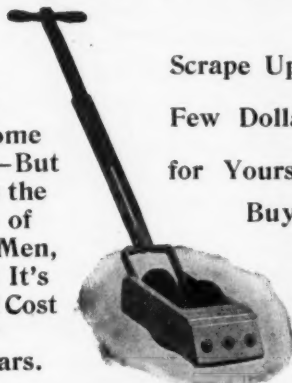


JAMES L. TAYLOR MFG. CO., BLOOMFIELD, N. J.

THE FOX FLOOR SCRAPER

It Will Save You Money

The Fox Floor Scraper Costs Some Money—But It Saves the Salaries of Several Men, So That It's Original Cost Quickly Disappears.



Scrape Up a
Few Dollars
for Yourself

Buy a **FOX FLOOR SCRAPER**

**The Simplest
and Best Device
for Perfect Floor
Scraping.**

Money Pays Dividends



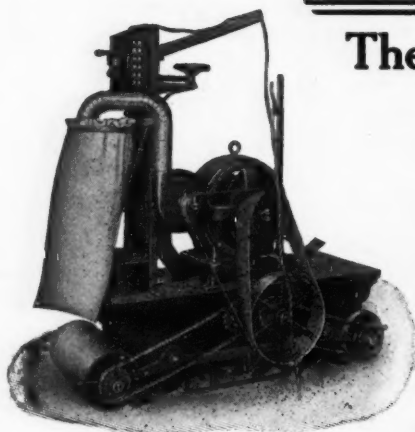
REGISTERED

The handiest wood scraping device on the market. Body of tool slides on the floor, insuring a uniform cut, blade is held by a clamp and can be adjusted or reversed in a second's time. Unexcelled for any kind of wood scraping. Never jumps or leaves waves. Every carpenter needs this tool. Price of Fox Cabinet Scraper, \$1.25.

Ask your dealer to order it for you, or we will ship on receipt of price.

**WRITE US BEFORE
BUYING**

FOX MFG. CO., 346 Broadway, MILWAUKEE, WIS.



The American Floor Surfacing Machine

Does the Work of 20 Men

BETTER

QUICKER

CHEAPER

The only machine whose work is specified by architects and meets the requirements of contractors and owners, giving a level, smooth, sand-papered finish, that harmonizes with the balance of the interior wood work.

It has surfaced and polished millions of square feet on every kind of floors, from common pine to the finest parquet, from bowling alleys to sky scrapers. It is self-propelling, no pushing or pulling, no blades to dull or sharpen. Used and indorsed by leading contractors everywhere. Big money in floor surfacing as a business, one machine earned over \$1850.00 in seven weeks. Guaranteed and sold on its merits.

Write for our New Booklet. "Surfacing Floors as a business"

The American Floor Surfacing Machine Company
TOLEDO, OHIO



**FREE
TRIAL**

COMMON SENSE Floor Scraper

The Common Sense Floor Scraper gives satisfaction where others have failed. Remember, if this scraper does not do better work than can be done by hand or by other scrapers, return it to me at my expense and you will be under no obligations to me whatever. Give it a trial and be your own judge. It's built right, works right, and price is right.

Write for Descriptive Circular and Price

Manufactured and Sold by

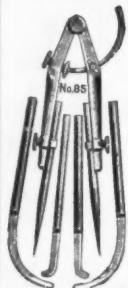
J. A. KUSTER - Plymouth, Wis.

AGENTS WANTED IN EVERY STATE



Sharpening

CALIPERS and DIVIDERS For CARPENTERS



We make several different styles, all good. Get our free Catalogue, No. 186, of the largest line of Fine Tools for all kinds of mechanics.



The L. S. STARRETT CO.
Athol, Mass., U. S. A.

BURLINGTON



Venetian Blind for inside window and outdoor veranda. Any wood; any finish to match trim.

Venetian and Sliding BLINDS Screens and Screen Doors

Equal 500 miles northward. Perfect privacy with doors and windows open. Darkness and breezes in sleeping rooms. Write for our catalogue, price list and proposition to you.



Sliding Blinds for inside use. Require no pockets. Any wood; any finish.

BURLINGTON VENETIAN BLIND COMPANY
950 Lake Street, Burlington, Vermont

LATEST IMPROVED ALL IRON SWING CUT-OFF SAW



alone of its kind

Properly
Counter-
Balanced

Adjustable Hanger

With Six Inch Adjustment

**CAN BE HUNG
ANYWHERE**

On the Floor
Under the Floor
On the Wall

With same ease of operation

Write for **FREE Catalog**
of our complete line.

LOVELL MACHINE WORKS, Gardner, Mass.

YOU CAN TRY

A "LITTLE GIANT" FREE

It must prove its value to you—
Must be just the machine you
are looking for before you pay us
a penny.

More than 20,000 "Little Giant" Floor
Scrapers have been sold to contractors all
over the world under these conditions.

Saves
Its Cost
in a Few
Days



*Could we have sold
20,000 machines if
they were not all
that we claim?*

Just ask yourself that question and then let us ship you a "Little Giant" under the following conditions:

Try it on your own floors and if not satisfactory in every way, ship it back at our expense. If it is satisfactory write us and we will give you satisfactory terms for its purchase.

No other Floor Scraper has the reputation or sale to equal
the "Little Giant."

More now in use than all others combined.

Write Now Today For Free Catalog

HURLEY MACHINE CO.

GENERAL OFFICE AND WORKS: 151-161 So. Jefferson St.

CHICAGO

BRANCHES: New York, San Francisco,
Toronto and London

FILL IN NAME AND ADDRESS AND SEND THIS COUPON

3
A.C.B.
I am inter-
ested in your
offer of free trial
and special terms on
the "Little Giant."
Please send me catalog and
complete information.

Name.....
Town.....
State.....

Geo. H. Bishop & Company

No. 78



Carpenters' nail cutting saw, purposely designed for repair and remodeling work where nails are numerous. This saw will cut nails and any untempered metal and can be refiled and put in condition as long as the blade lasts. The saw runs without set and the teeth are filed straight over same as a rip saw. The usual saw can be used nearing the nail, when this saw is used, and the usual saw taken on again after nail is passed. The saving of time and material will pay for itself and a neater job accomplished. The patent adjustable handle enables the saw to be worked in all manner of places.



In cutting wood it makes a clean clear cut for tight fittings. Made in lengths 16 to 24 in. Most popular sizes are the 18 and 20 in. lengths. Ask your dealer to supply you, if he will not write us.

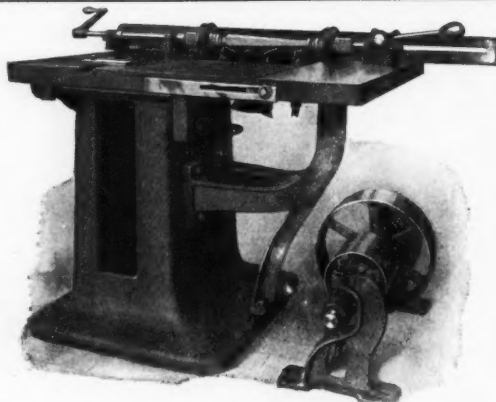
Geo. H. Bishop & Company
Lawrenceburg, - - - - - Indiana

Write us for Circular that lists

33 Varieties

of work that can be done on our

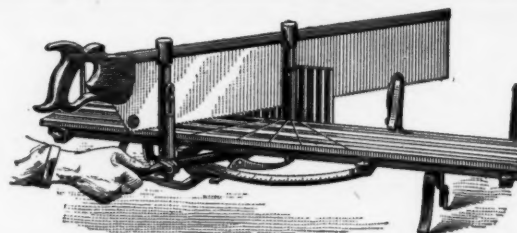
No. 6 Universal Turning and Block Machine



This machine is built like a machine tool, and is a rapid, practical and handy machine for every class of work for which it is recommended, from making turnings and mouldings of various kinds to panel raising, jointing, cabinet sawing, etc., etc. Invaluable in the manufacturing plant and a veritable gold mine for working up waste.

Write now for that "33 Varieties" Circular

C. Mattison Machine Works
 879 Fifth Street, :: :: :: :: :: BELOIT, WIS.



Nicholls Common Sense Miter Box

We have endeavored to place on the market a Miter Box suitable for practical work, and having tested it thoroughly, we are satisfied we have succeeded in doing so, and are placing this Miter Box on the market warranted in every respect. :: :: :: :: ::

Nicholls Manufacturing Co. :: Ottumwa, Iowa

Ball-Bearing Spring Hinges.

THAT ARE PRACTICAL

The Shelby Chief Double Acting Floor Hinge has solved the problem of easily get-at-able, hinges, impervious to water and dampness.

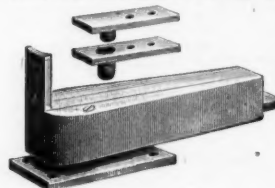
Doesn't go in the floor but rests on top. Easily applied, and very economical.

The labor saving feature is being appreciated by carpenters and builders everywhere.

Send for our free catalog which contains some sensible hinge talk, and also shows our full line of Double Acting Ball-Bearing Spring Butts and Builders Hardware. Free on request.

Write Today.

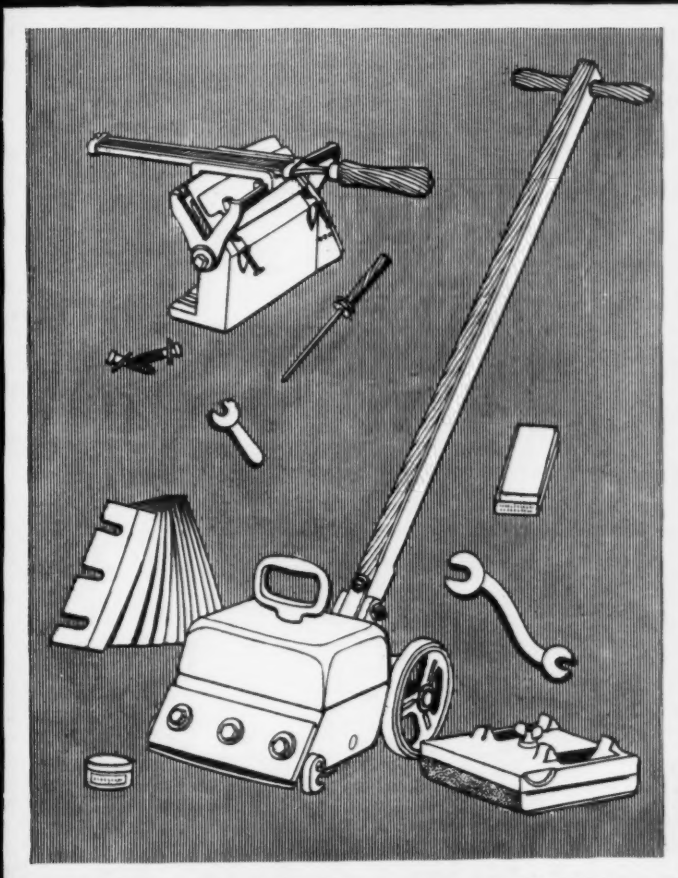
The Shelby Spring Hinge Co.,
 Shelby, Ohio

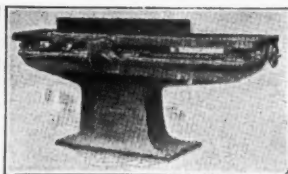
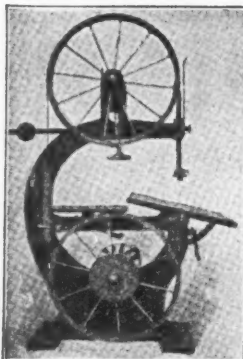


One Week's Free Trial

I WANT EVERY CONTRACTOR OR CARPENTER who has any floor scraping to do to send for the Acme Floor Scraping Outfit on a week's free trial basis. Put the machines to work. Give them a thorough tryout. Let your men operate them, then judge for yourself as to their merit. ¶ No deposit required. No strings to this offer. It is a straightforward business proposition, based on the fact that I do not expect you to buy an article without you knowing what it is and what it will do. Talk is cheap, so are words on paper. The Acme Machines do their own talking. ¶ Will you listen to what the Acme has to say? Kindly remember it costs you nothing, neither do you obligate yourself in any way to buy the outfit. I want to introduce the machines to you so that when you are ready to buy, you will know what the Acme is like. ¶ Send for the machines today, also for booklet which fully describes the same.

JOS. MIOTKE
247 LAKE STREET
MILWAUKEE
U . S . A

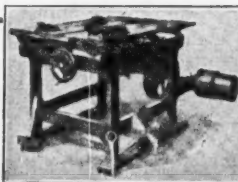




COMPLETE WOOD-WORKING SHOPS

For CARPENTERS and CONTRACTORS

These Four Machines with a Gasoline Engine or Motor make a Model Shop



You can save time and money by being in a position to manufacture your own millwork.

We also carry a **LARGE STOCK OF UP-TO-DATE, BUT SLIGHTLY USED MACHINES.** We can surprise you with the small investment it requires to be independent. Write us today for full information

Right Prices
Prompt Shipments

CHICAGO MACHINERY EXCHANGE (INC.)
Woodworking Machinery Merchants

9 to 10 North Canal St., CHICAGO

CARPENTERS

In these days of close competition need the best possible equipment, and this they can have in

Barnes' Hand and Foot Power Machinery

Our new foot and hand power Circular Saw No. 4, the strongest, most powerful and in every way the best machine of its kind ever made. For ripping, cross cutting, boring and grooving.

SEND FOR OUR
NEW CATALOGUE

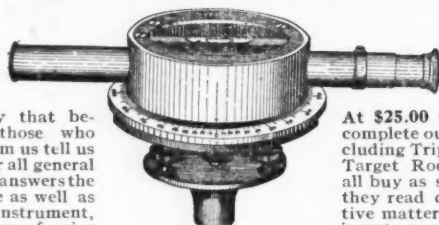
W. F. & John Barnes Co.

74 RUBY ST., ROCKFORD, ILL.



YOUR OUTFIT IS NOT COMPLETE WITHOUT A

BOSTROM Improved Builders' Level No. 3



We say that because those who buy from us tell us so. For all general work it answers the purpose as well as any instrument, regardless of price

At \$25.00 for the complete outfit, including Tripod and Target Rod, they all buy as soon as they read descriptive matter, which is sent upon request

Bostrom-Brady Mfg. Co., 127 Madison Ave., Atlanta, Ga.

CUSTOM MADE FLY SCREENS

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of screens.

For outside screens we use the identical finish of the outside of Pullman cars.

The best grades of Wire Cloth, enameled, galvanized, genuine bronze, etc. Fastened by tacks or by the "lock-strip" process.

Intending purchasers may have free by mail samples of woods, finishes, and wire cloth and copy of catalog and price list. Agencies in many cities. Special terms to contractors and builders.

The A. J. PHILLIPS CO.
FENTON, MICH.

23 Years' Experience

3½ Acres of Floors

PLATE GLASS Bath Room Fixtures

FOR RESIDENCES, HOTELS, OFFICE AND APARTMENT BUILDINGS

Absolutely sanitary, require no cleaning, never wear out or show the effects of use. Not affected by hot or cold water. The modern 20th century toilet and lavatory fittings.

PLATE GLASS TOWEL BAR



Price \$1.50

No. 141 24 inches, adjustable. Also made in 30, 36, 42 and 48 inch lengths at slightly higher prices.

Round glass towel bars, \$2.00

Adjustable glass towel shelves, \$3.50, \$4.00, \$6.00

We also sell plate glass with polished edges for table tops, any size, and glass push plates for use in fine residences and apartments, manufacture and re-silver mirrors, etc.

CATALOGUE SENT FREE ON APPLICATION

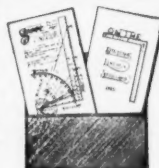
Geo. H. Anderson & Co.

Manufacturers and Jobbers of Plate Glass Specialties
281-291 W. Superior Street - - CHICAGO

On the Square



every builder should have my little works and be a constant reader of the "Cement World," the leading paper of its kind published.



STEEL SQUARE POCKET BOOK.....\$.50
FOLDER (in case with pockets)..... .25
DESIGNING (finely illustrated)..... .50
CEMENT WORLD 1.00

All for \$1.75.

\$2.25

DWIGHT L. STODDARD, Author of "Steel Square Pocket Book," 328 W. Raymond St., Indianapolis, Ind.
Send for other Combination Offers.

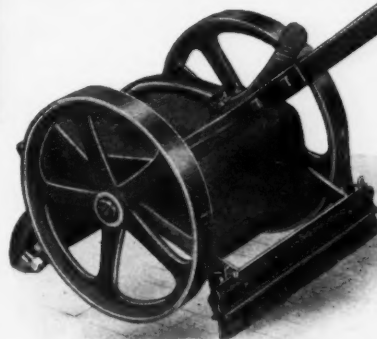
Guarantee

We Positively Guarantee
This Machine to Do More,
Better and Easier Work
than Any Other Scraper
on the Market. The
Machine is Free if Above
Statement is Not True

Nothing Half Hearted About This

There's nothing half hearted about that statement, is there? We certainly stand to lose if the machine doesn't stand up to the Guarantee

This Brush is an Exclusive Patented Feature. No Other Machine Has or Can Use It. Patent Allowed Nov. 1907.



At Each Stroke This Brush Sweeps the Floor of Shavings, Grit and Dirt.

ACKERMANN'S RAPID FLOOR SCRAPER

Means More, Better and Easier Work Because of Its Superior Advantages

By means of a simple eccentric device, the knife blades of the "Rapid" can be instantly moved or set at any angle, thus securing a "drawing out." No floor scraper can be a success that does not bring the knife blade across the floor surface with a natural, hand-like movement. The "Rapid" does this perfectly. Any size blade up to 4½x8 inches can be used on this machine.

Exclusive Knife Sharpening Feature

By simply reversing the position of the machine (turning it over) it forms its own knife sharpening vise, the blade being brought into a perfect upright position, ready to sharpen, without removing it from the machine. This saves time—and time is money. The operator proceeds to sharpen the knife, then turns the machine over and goes ahead with his work.

Our Special Offer

We will ship a Rapid Floor Scraper, charges prepaid, subject to use FREE for three days, by any responsible person. If you are then satisfied the machine is all we claim for it you can purchase it, if not we will have the machine returned at our expense. Further, if, after you purchase this machine, you find that, at any time, under equal conditions it will not do "More," "Better" and "Easier" work in a given number of hours than any other floor scraper, we will return your money and you can keep the machine free of cost. This is a straight offer, without any strings to it, made to anyone desiring to secure the best floor scraper made without risking their money until they know what they are buying. We refer to the State Bank of Michigan, Grand Rapids, Mich., as to our guarantee and responsibility.

J. B. ACKERMANN CO.

Sole Manufacturers

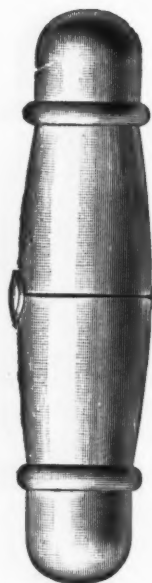
GRAND RAPIDS

MICHIGAN

This shows how knife blade is instantly brought into position to sharpen. The machine acts as its own vise.



Cut Showing Machine in Reverse Position Ready to Sharpen the Knife-Blade



Here is a Gimlet

Equal in quality and usefulness to any Brace Bit

HANDLE OF
SELECTED
COCOBOLO
WOOD

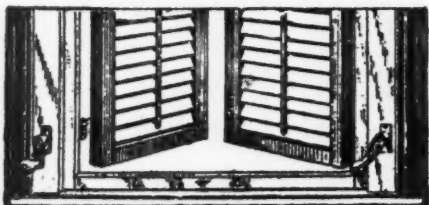
THREE SIZES ONLY
Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid **15 cents** each

H. H. MAYHEW COMPANY

SHELBURNE FALLS, MASS.

MALLORY'S



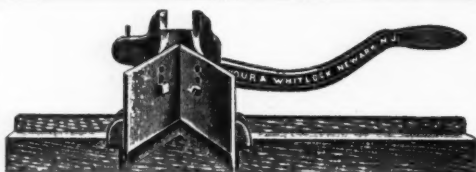
Standard
Shutter
Worker

New and im-
proved patterns
and designs.

Opens and closes the blinds without raising the window.
Automatically locks the blinds in any position desired.
Made of gray and malleable iron. The best and most durable blind
hinge. Incomparable for strength, durability and power. Can be ap-
plied to old or new houses of brick, stone or frame. Send for Illustrated
Circular. If your hardware dealer does not keep them send direct to

MALLORY MANUFACTURING CO.
204 Flemington National Bank Building, FLEMINGTON, N. J.

The S. & W. MITRE



Hand or
Foot
Power

24, 3
and
4 inch
Saws

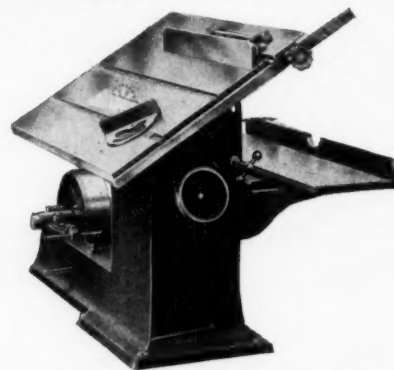
GUARANTEED ABSOLUTELY ACCURATE
Write us for particulars

SEYMOUR & WHITLOCK
1 GARDEN ST., NEWARK, N. J.

You will increase your profits and save a lot of
time by making

Crescent Machines

an important part of your shop equipment. They are
well built by mechanics skilled in building wood work-
ing machinery, and only the best materials are used
in their construction.

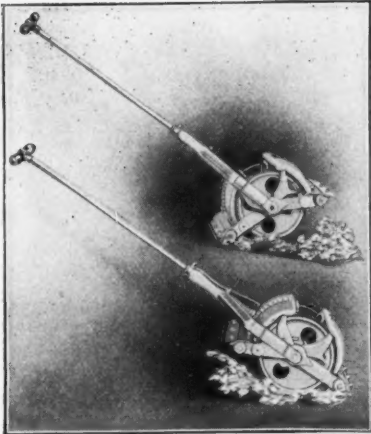


THIS is the No. 2 Crescent Saw Table illustrated and described
on pages 28 and 29 of 1908 catalog. It is a thoroughly sub-
stantial machine, well suited for general work. Can be furnished
with Boring Attachment if you want it that way. Table tilts to
45 degrees, and mandrel is made long enough so dado head may
be used. Machine is self-contained; no countershaft required.
It is complete with saw and endless belt when it reaches you.
Send for 1908 catalog giving complete description and telling
about our line of Band Saws, Saw Tables, Jointers, Shapers,
Borer, Swing Cut-Off Saw, Disk Grinder, Planers, and Planer
and Matcher.

The Crescent Machine Company

224 Main Street

Leetonia, Ohio



I Want to Meet You Face to Face and Show You the WEBER at the Wisconsin State Fair, Sept. 7 to 11

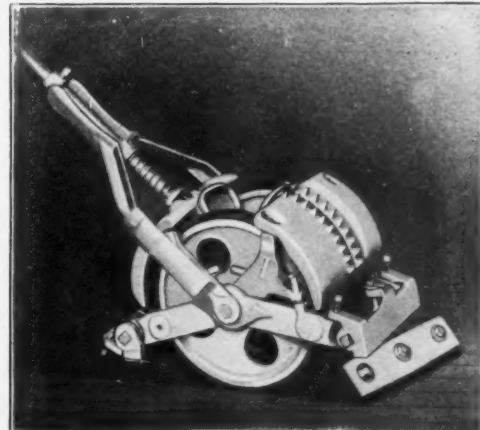
THE Wisconsin State Fair is going to give me an opportunity of having a personal talk with you and of showing you, man to man, why the Weber Double Acting Floor Scraper is better than other floor scrapers.

I am going to be at the fair from the time it starts right up to the finish and am going to show my five different machines; my scraper; my scraper with shearing cut attachment; my scraper with bowling alley scraper attachment, bowling alley jointer attachment and my scraper with sander attachment. At my exhibit I am also going to demonstrate the machine with its different attachments, on all kinds of hard wood.

I want you to come to my exhibit whether you have a floor scraper or not as I want to prove to you personally every claim I make for the Weber Double Acting Floor Scraper. I know that I have the best machine on the market and I want to prove it to you so that you will know it too. To show you that I have the courage of my convictions I will even send you a Weber on FREE TRIAL. Just tell me how many days you want to try it.

I am also going to show the Weber Saw Filing Vise and will have a few extra ones on hand in case you want to buy one and take it home with you.

Now I want you to be sure and come to my exhibit between the J. I. Case Plow Co. building and the display of the Interior Woodwork Co. All I want is just to "show" you. Come and register and get one of my booklets.



I will also demonstrate the Weber Automatic Sharpening Device at the Fair and will show you personally how simple it is to operate, how it is perfectly true and exact in its action and why it is better than other sharpeners.

J. F. WEBER, President, WEBER MFG. CO.

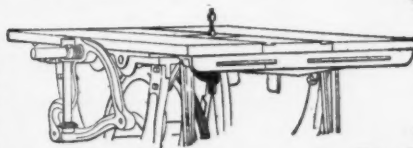
670 71st Avenue,
WESTALLIS, WISCONSIN

One Man with the No. 5 Union Combination Self-Feed Rip and Cross-Cut Saw

can do the work of four men using hand tools, can do it with ease, can do it better. Consider the amount saved—three men's wages—and compare with the cost of the "Union" saw. In a short time the machine will pay for itself and then the wages saved will go into your pocket.

EVERY MACHINE is carefully tested before leaving factory. We guarantee entire satisfaction and machine may be returned at our expense if, after two week's trial, you prefer your money back.

SUITABLE FOR various kinds of work—ripping, (up to 3½ inches thick), cross-cutting, mitering, etc., and with additional attachments rabbeting, grooving, dadoing, boring, scroll-sawing, edge-moulding, beading, etc., almost a complete workshop in one machine.



"Union" Moulding Attachment



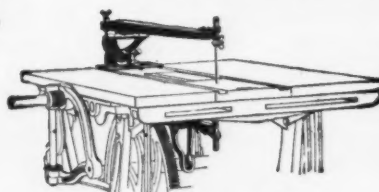
(91-H)

No. 5 "Union" Combination Self-Feed Rip and Cross-Cut Saw.

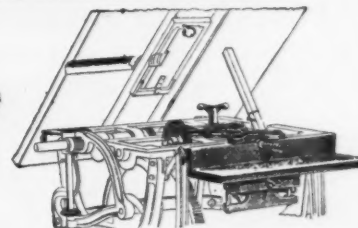
Ask for Catalogue "A," fully describing our complete line of wood working machinery.

The Seneca Falls Mfg. Co.,

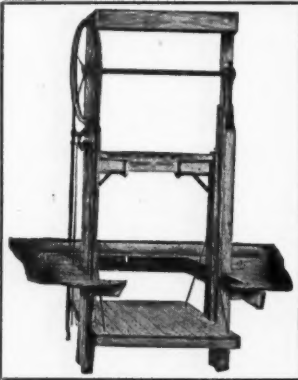
218 Water St.,
Seneca Falls, N. Y., U. S. A.



"Union" Scroll-Saw Attachment.



"Union" Boring Attachment.



PERFECTION ELEVATORS

ARE
"BEST BY EVERY TEST"

For PASSENGER or FREIGHT SERVICE in Factories, Stores and Dwelling Houses.

Our Elevators are noted for their Easy Running and Serviceable Qualities. They are practically self contained and can be erected by any carpenter in a few hours. We furnish Plans for erecting. When writing, state your requirements.

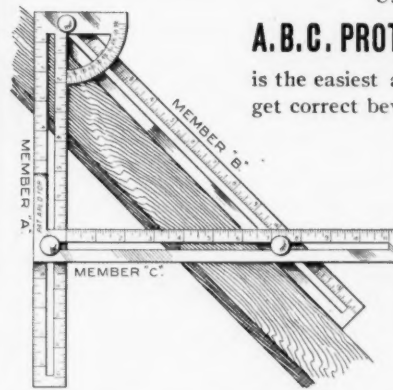
Sidney Elevator & Mfg. Co., Sidney, O.

EATON & PRINCE HAND-POWER ELEVATORS CORNER-LIFT CENTER-LIFT

FOLDER No. 99 GIVES FULL DETAILS



EATON & PRINCE COMPANY
CHICAGO



Using the

A.B.C. PROTRACTOR SQUARE

is the easiest and quickest way to get correct bevels, cuts and measurements. Ask your dealer for it or write us direct.

Union Made
Price \$3.00

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TOOL CO.**
CROOKSTON,
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Buy Art Glass

From the Manufacturers

We are actual manufacturers of Art Leaded Glass in all the latest and best styles, with Copper and Brass settings. Also Colored Glass of all kinds for making lamp shades, etc.

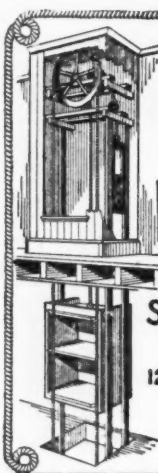
25% Discount to Contractors

Let us give you an estimate on your next job. Quality of goods is all it should be, prompt shipment is certain, price is always low.

Estimates and Designs Furnished Promptly

McCULLY & MILES CO.

76 Wabash Avenue : : CHICAGO



DUMB WAITERS AND HAND ELEVATORS

OF THE MOST IMPROVED
AUTOMATIC CONSTRUCTION

INVALID LIFTS
TRUNK, CARRIAGE,
SIDEWALK AND
FREIGHT ELEVATORS

SEDGWICK MACHINE WORKS
POUGHKEEPSIE, N.Y.
AND
128 LIBERTY ST. NEW YORK

CATALOGS AND
ESTIMATES FURNISHED
SEE SWEET'S INDEX

PUMPS, DOOR-HANGERS, STORE LADDERS

The Pump
That Pumps

SPRAY
PUMPS

Double-acting,
Lift, Tank and
Spray



PUMPS
Store Ladders,
Etc.

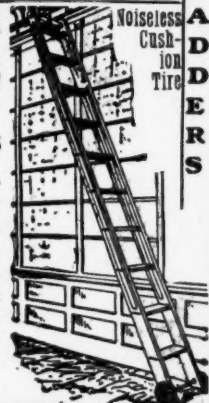
Hay Tools
of all kinds
Write for circulars
and prices.

Myers Stayon Flexible Door Hangers



with steel roller bearings,
easy to push and to pull
cannot be thrown off
the track — hence its
name — "Stayon." Write
for descriptive circular and
prices. Exclusive agency
given to right party who
will buy in quantity.

P. E. MYERS & BRO.
Ashland, Ohio.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

CARPENTERS

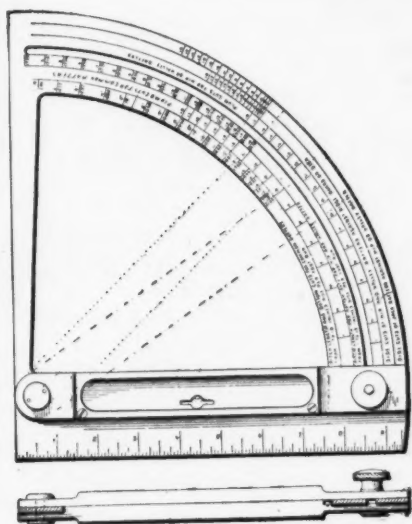
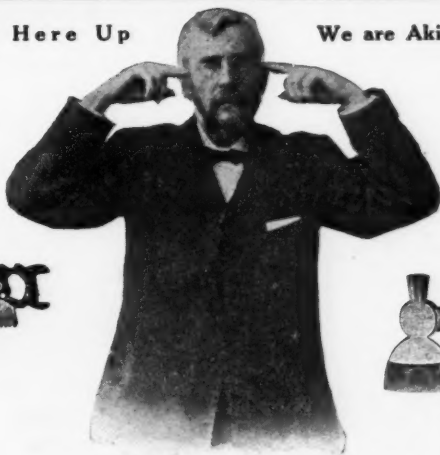
Would You Keep Abreast of the Times?

From Here Up

We are Akin to the Gods

From Here Down

We are Akin to the Ox



THE CALHOON Rafter and Polygon Bevel

Every bevel in the universe is contained in a quadrant; pass a line through it, from the center of the square to any degree or pitch, register on it the length (per foot run) and the opposite blades of the square will automatically (from that line) give bevels desired. See?

All calculations are based on 12 inches the unit of *base run* and 24 inches the unit of *pitch or rise*, and all hip, valley, octagon and jack, or cripple rafters on run and rise of principal or common rafter. We all know how difficult it is to read and apply the square. This tool will help you do both, or, rather, do both for you, as it is a practical tool.

The relative use of this tool in a carpenter's hands is that of an X-Ray machine to the surgeon, or of an interest book to a banker, or the computing scale or cash register to the merchant.

It is an organization of draft-board, square, tri-square, bevel-square, plumb, level and bevel-protractor into one tool.

This is a substantial TOOL 9½—10½. **Made of Nickeled Steel.**

Testimonials

"The best framing tool in existence."—O. C. Kagelmacher, Case School Applied Science, Cleveland, Ohio.

"The most complete tool I have ever seen."—M. M. Lloyd, Master Mechanic, East St. Louis & Suburban Railway Company.

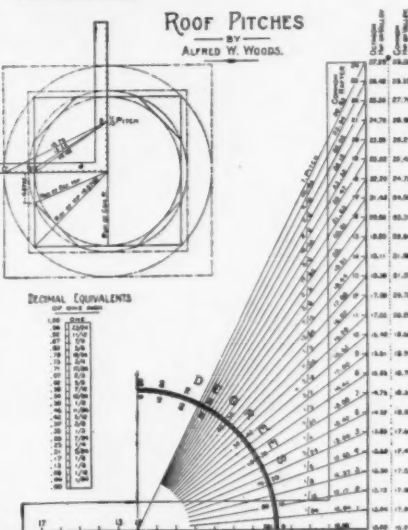
"The best mechanical device ever put on the market."—District Council, Kansas City, Mo., C. J. Huston, president, Edd. S. Abdill, secretary; District Council, Indianapolis, Ind., Chas. E. Bacon, president, Z. F. Carigan, secretary; District Council, Cleveland, Ohio, Phil. Hyle, president, Jno. B. Melcher, secretary; District Council, St. Louis, Mo., Wm. M. Davis, secretary.

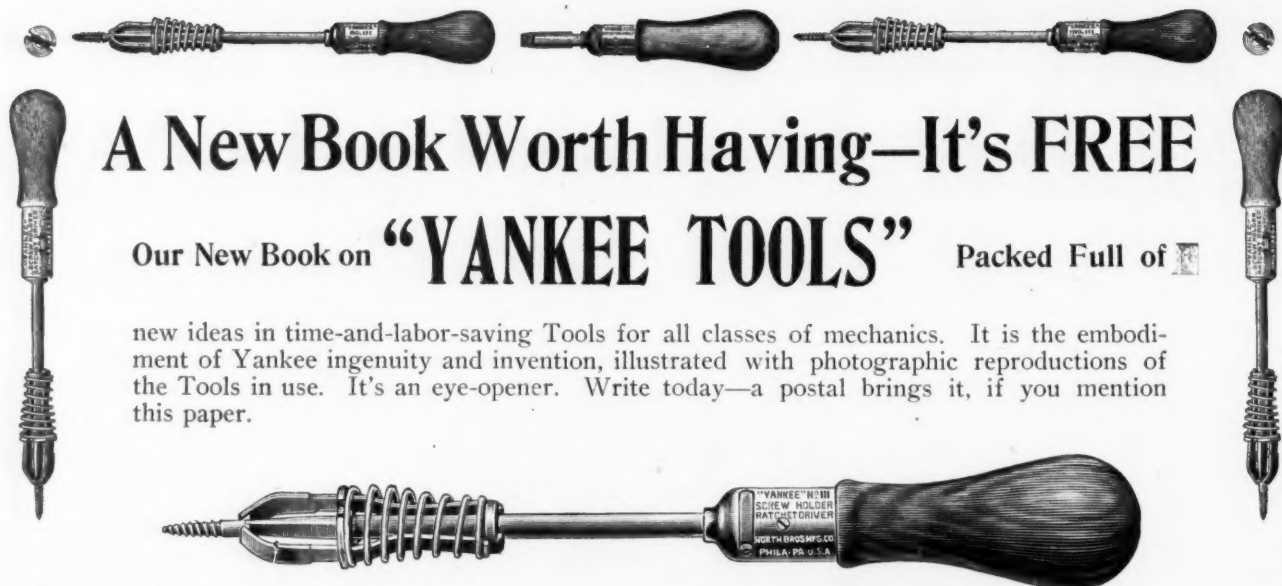
Ask your Retail Hardware Dealers for them, or write to the following Jobbers for one:

Standart Bros. Hardware Company	-	-	-	Detroit, Mich.
Vonnegut Hardware Company	-	-	-	Indianapolis, Ind.
The W. Bingham Hardware Company	-	-	-	Cleveland, Ohio
The McIntosh Hardware Company	-	-	-	Cleveland, Ohio
Geller Ward & Hassner Hardware Company	-	-	-	St. Louis, Mo.
Witte Hardware Company	-	-	-	St. Louis, Mo.
Tenk Hardware Company	-	-	-	Quincy, Ill.
Towneley Metal & Hardware Company	-	-	-	Kansas City, Mo.

Or Send \$3.50 to - **A. O. CALHOON & COMPANY** - Perry, Mo.

This illustration gives an idea of adjustment. The book of instruction will explain its full uses and application. Booklet of instruction with each tool.






A New Book Worth Having—It's FREE

Our New Book on **"YANKEE TOOLS"** Packed Full of

new ideas in time-and-labor-saving Tools for all classes of mechanics. It is the embodiment of Yankee ingenuity and invention, illustrated with photographic reproductions of the Tools in use. It's an eye-opener. Write today—a postal brings it, if you mention this paper.



Here's a sample—the Yankee Ratchet Driver (5 sizes) with Screw Holder. Takes the screw quickly and holds it firmly with bit in slot. Releases automatically as screw is driven home. Holder slipped back on the blade when not in use. Ask your dealer to see them.

NORTH BROS. MFG. CO., Philadelphia, Pa., U. S. A.



FAR AHEAD for Smooth, easy work and holding edge will be YOUR VERDICT ON TRYING

CHAPLIN'S IMPROVED PLANES

Patented Feb. 14, 1899; Oct. 30, 1900; Dec. 24, 1902

We invite the
Severest
Comparative
Tests



We want you to have a copy of our booklet

"A 'Plane' Talk About a Good Plane!"

We want you to have a copy, for it is a booklet you really need in your business. We'll gladly send you this booklet with our compliments, promptly upon receipt of your request.

Tower & Lyon Company, 95 Chambers Street, New York




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WARRANTED
Trade Mark Registered
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mechanics not acquainted with "Reliance" Tools to test the exceptional merits they possess. Chisels, Gouges and Drawing Knives made of the choicest materials—constructed and tempered so as to give satisfaction at all times. Our new circular, "E," will be mailed upon request.

THE RELIANCE EDGE TOOL CO., Youngstown, O.

Wood Bar Clamp Fixtures Per Set 50c

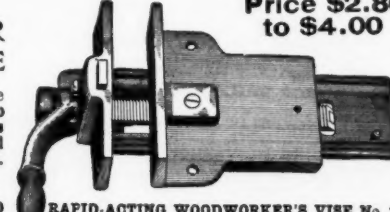


OVER 18,000 OF OUR STEEL RACK VISES IN USE

25 doz. Clamp Fixtures bought by one mill last year. We ship on approval to rated firms, and guarantee our goods unconditionally. Write for list of Steel Bar Clamps, Vises, Bench Stops, etc.

E. H. SHELDON & CO.
84 North May St., - - CHICAGO

Price \$2.80 to \$4.00



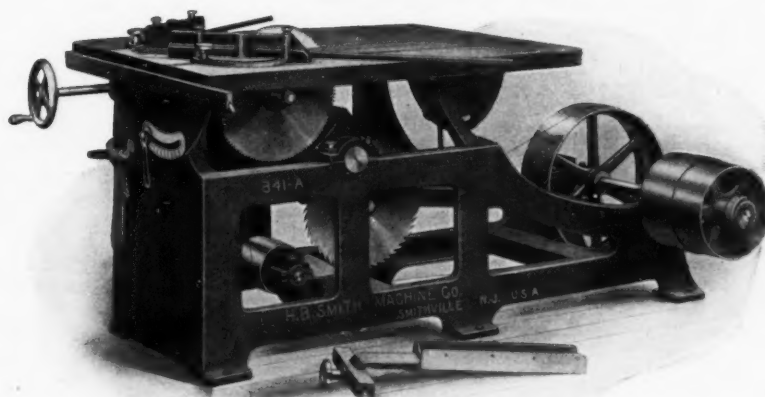
RAPID-ACTING WOODWORKER'S VISE No. 3.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

SMITH of SMITHVILLE The Sign of QUALITY

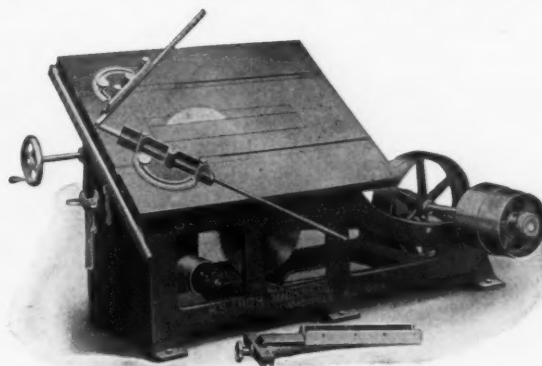
Modern Shop Equipments a Specialty
We Make 150 Different Kinds of Machines

ASK FOR CATALOG



No. 341 A Combination Double Arbor Saw

EVERY user of machinery knows that if he were obliged to reduce his equipment to one machine he would retain a **Universal Saw**. The **Circular Saw** is the indispensable tool—the beginning of all things in a shop—therefore why not make a wise selection? We build 21 different types of sawing machines and feel competent to consult intelligently with you on this subject. The Machine shown here-with is very useful for general work, and a great labor-saver when operated on specific wood working problems. **Q** Please bear in mind that all machines designed by **Smith of Smithville** always contain approved features for the elimination of danger to the operator. We also guard against the annoyance and expense of breakage by building machines sturdy and well, regardless of the influence of low priced competition. The name **Smith** in connection with wood working machinery is a synonym of **Quality**. Write for special circulars and prices.



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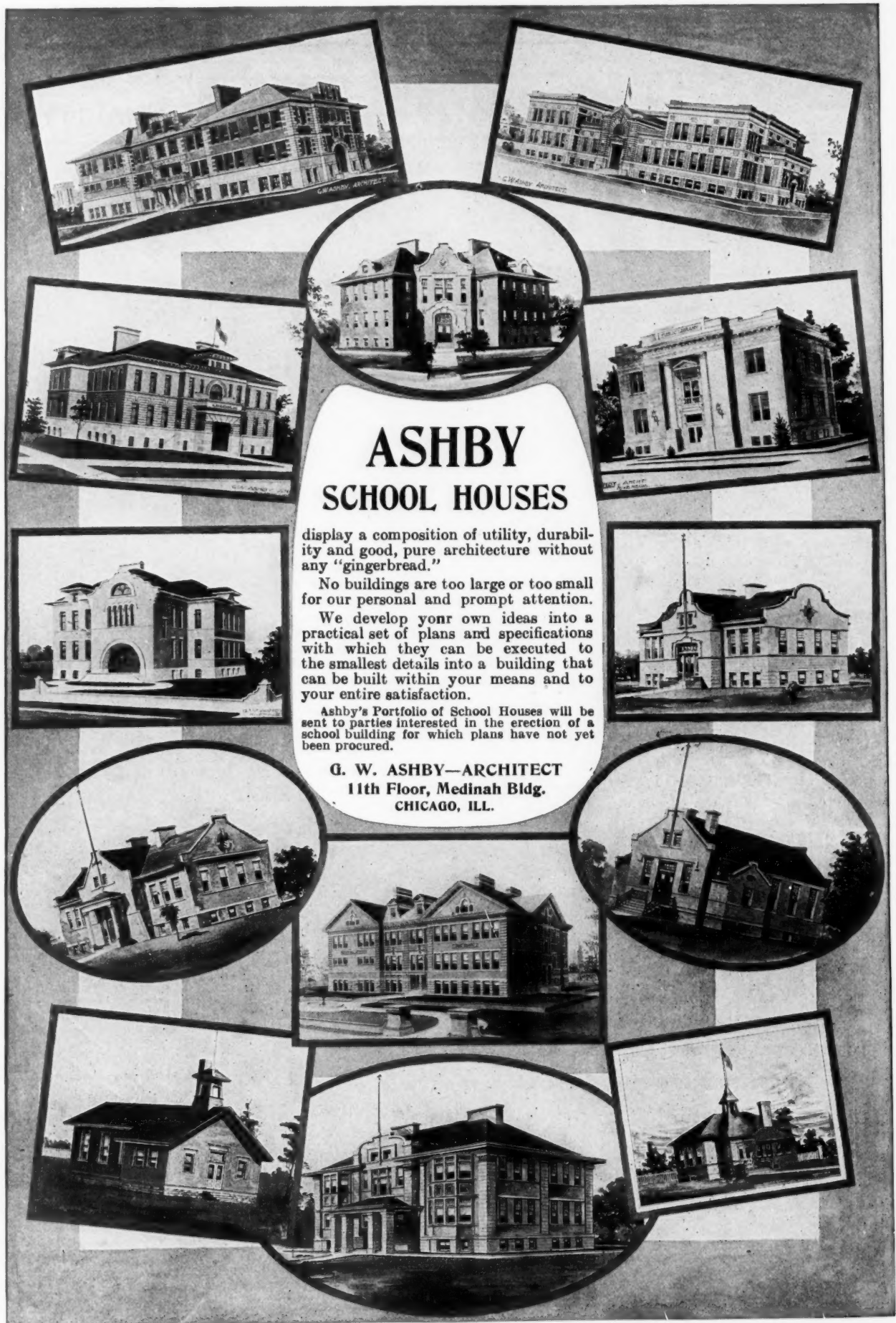
SMITHVILLE, N. J., U. S. A.

BRANCHES:

CHICAGO

NEW YORK

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ASHBY SCHOOL HOUSES

display a composition of utility, durability and good, pure architecture without any "gingerbread."

No buildings are too large or too small for our personal and prompt attention.

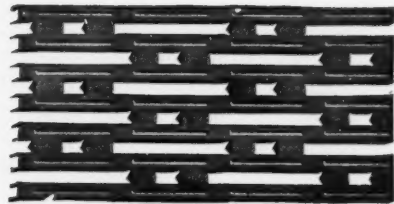
We develop your own ideas into a practical set of plans and specifications with which they can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

Ashby's Portfolio of School Houses will be sent to parties interested in the erection of a school building for which plans have not yet been procured.

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CHICAGO, ILL.

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ECONOMY FROM START TO FINISH



Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. Notice the level

plastering surface—the construction that's different.

Sagging Is Impossible

- Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department C for samples. Free to anybody interested.

The American Rolling Mill Co.
MIDDLETON
OHIO

AMERICAN PLAN. EUROPEAN PLAN.

HOTEL WINDSOR
ATLANTIC CITY
G JASON WATERS
SEND FOR BOOKLET

GOLF GARAGE CAFE ORCHESTRA
ON THE BOARD WALK

Send for Our Map of Boston,
Showing Exact Location
of

HOTEL REXFORD.

75 Cents **Per Day**

FREE BATHS ROOMS 75¢ PER DAY 35¢ PER WEEK UPWARDS
MODERN HOTEL HOT AND COLD WATER IN EACH ROOM
HIGHLY RECOMMENDED FOR CLEANLINESS AND COMFORT
BULFINCH PLACE, BOWDOIN ST. & BULFINCH ST.
BOSTON, MASS.

25 Suites with Bath
250 Rooms Newly Furnished
With Brass Beds

When you visit Boston, if you desire the greatest comfort with the least expense, you will find Hotel Rexford all right. You will notice the central location of the hotel, its nearness to the Union Station, State House, Court House, theatres, and business houses. In other words, it is a part of Beacon Hill. Of course what you want when you visit Boston is comfort and safety, and, if economy goes with it, that makes a combination that will undoubtedly prove satisfactory. Therefore, when in town, "TRY THE REXFORD" and we will make special efforts to please you.

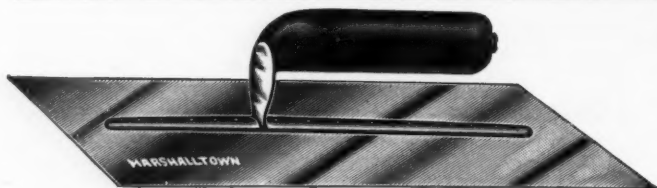
SARGENT'S IMPROVED STEEL SQUARE

The difference between good and indifferent Carpenters' Squares lies in something more than excellence of material and workmanship, which are, of course, among other "Sargent" features—it is in the qualities that increase its all-round efficiency. That is why the practical "Sargent" Standard Steel Square is the universal favorite wherever Squares are used.

Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. "A practical treatise on Steel Square" is what several recipients have declared our little publication. Copy free simply by mentioning you Carpenter and Builder.

Sargent & Company
New York

1149 Leonard Street



The Marshalltown Plastering Trowel

The
Best 3 Made

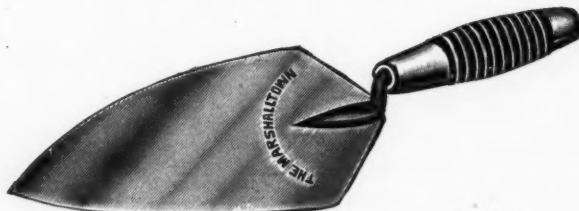
EVERY TROWEL
GUARANTEED

No Mistake in
Insisting on
MARSHALL-
TOWN

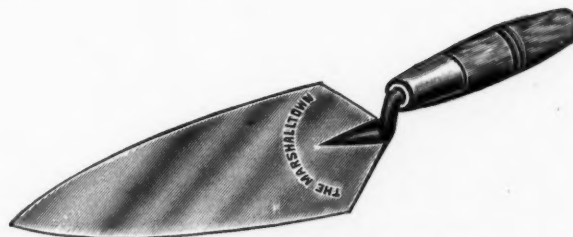
We manufacture a full line of **High Grade Plasterers' Tools**, and it would be well for every plasterer, bricklayer and contractor to have one of our catalogues.

Marshalltown Trowel Co.

Marshalltown, Iowa, U. S. A.



The Marshalltown Wide Heel Leather Handle Brick Trowel



The Marshalltown Philadelphia Pattern Brick Trowel

ARE YOU GOING TO BUY A Builder's Level or Transit?



Let us demonstrate to you the superior quality of the

"STERLING" INSTRUMENTS.

In Design, Workmanship and Quality they are unequalled and only cost \$50.00, complete.

We are Headquarters for Level Rods, Tapes, Drawing, Tracing and Blue Print Papers, Drafting Instruments, Scales, Triangles, T Squares, Links, Pencils, etc. at very moderate prices.

Send for Circulars and Book of Instructions and Adjustments.

ISZARD-WARREN CO., Inc.

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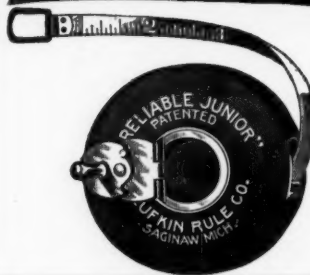
PHILADELPHIA, PA.

LUFKIN STEEL TAPES and RULES

ARE INDISPENSABLE
FOR ACCURATE WORK

MADE BY
The Lufkin Rule Co.
Saginaw, Mich., U. S. A.
New York London

For Sale Everywhere.
Send for Catalogue.



100% More Light

3-Way Prism



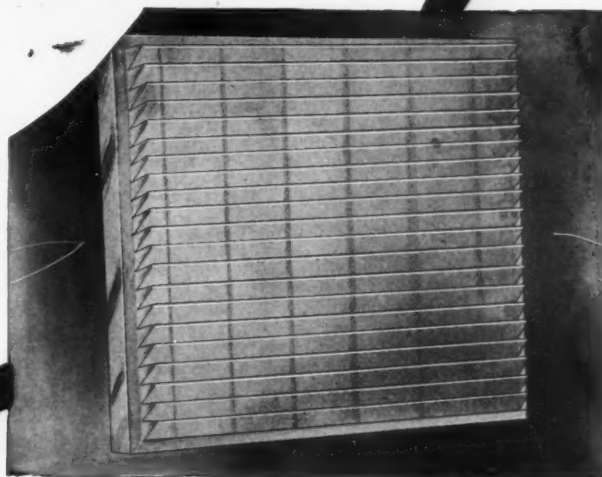
The construction is practical and thorough in every detail. Made of wrought steel, 1½ inch by ½ inch beam, with 1 inch by ½ inch flat bar running through at right angles, forming a net work to receive either Plain Lens or 3-Way Prisms, and is made to size as ordered in black, and then galvanized, making it positively immune from corrosion.

Small cut shows sectional view of construction with Prism Lens, and is intended to be used as sidewalk or vault lights, same construction with Plain Lens is used as a floor or skylight. Leading architects and engineers have heartily indorsed the principle.

Large cut shows the 3-Way Prisms that are saving money for hundreds of concerns throughout the country. By installing them in the lobby of the Broad Street Station at Philadelphia, the Pennsylvania Railroad were enabled to dispense with eight hundred incandescent lights. The natural light from the sky is diffused to a distance of three hundred feet of what was previously darkness. This is the story that is being told wherever 3-Way Prisms are used. More light—better light—expense eliminated are three features effected by this system. All are explained in the catalog, free to anybody interested.

American 3-Way Prism Company
134 North 10th St. PHILADELPHIA

in dark interiors, basements, etc., is obtained by installing 3-Way Prisms. Eliminates use of artificial lights, such as electric lights, gas, etc., and allows sweet, pure, sanitary daylight to enter.



LANCASTER COMBINATION CORNER BRACE

A TOOL THAT MEETS ALL REQUIREMENTS

A Combination of a Ratchet, Straight and Corner Brace; also can be Used as a Breast Drill

BALL BEARING, COCOBOLO HEAD, FINEST FINISH AND NICKEL PLATED

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Our Entire Line



If your dealer does not carry them in stock, send to us direct—\$3.50—and we deliver it, express charges paid.

LANCASTER MACHINE AND KNIFE WORKS
Lancaster, New York

DON'T PUT SASH WEIGHTS IN YOUR WINDOWS—THEY ARE OUT OF DATE

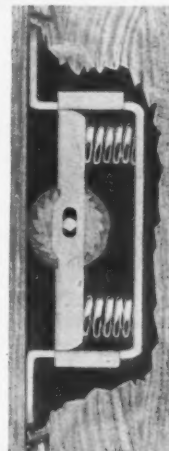
The "AUTOMATIC" SASH HOLDER

The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

A sample set of four sent, postpaid, for \$1.20. Ask your dealer, or write to us direct.

Automatic Sash Holder Company
277 Broadway, New York City.

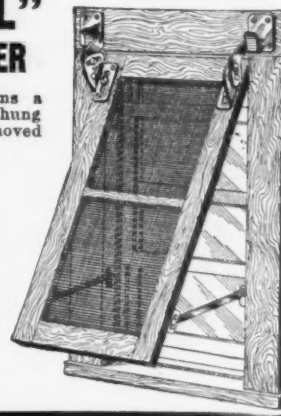


The "UNIVERSAL" ADJUSTABLE HANGER

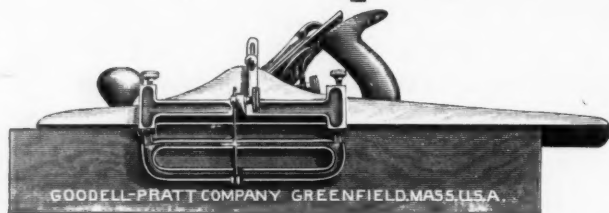
can be used anywhere. It forms a perfect, practicable lock; sash hung with it cannot be opened or removed from the outside; it cannot be blown open by storms; makes practicable the only substitute for the half-sash sliding screen: is sold in sets, half sets, or in any other way the trade demands; indestructible; will wear out a dozen screens.

Ask your hardware dealer or write for free sample and catalog.

THE ADJUSTABLE HANGER CO.
415 Huron St., Toledo, Ohio,
U. S. A.



Plane Gauge No. 333



Carpenters will find this tool of great assistance in all cases where it is necessary to plane a bevel.

This tool can be attached to any Iron Plane and with a little practice an inexperienced workman can do as good a job as an old carpenter, and in so short a time as to put the other man to shame.

All up-to-date carpenters should provide themselves with this labor-saving and time-saving attachment.

Catalog giving complete description will be sent free on request.

GOODELL-PRATT COMPANY
GREENFIELD, MASS., U. S. A.

**We Will Send
ONE ONLY**



**Knurled Nail Set
for Five Cents**

and a Two Cent stamp for Postage—if after trial you will part with it, we will pay you Fifteen Cents to get it back. This is done to make them known. You can have either $\frac{1}{32}$, $\frac{1}{16}$, $\frac{3}{32}$ or $\frac{1}{8}$ " point.

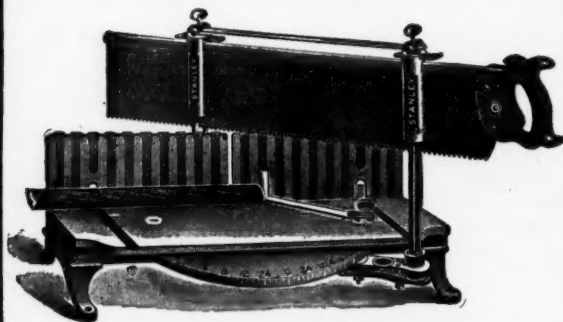
Booklet, "Tools That Last," will be mailed upon application: : : :

Braunsdorf-Mueller Co.

201-211 Madison Ave.

ELIZABETH, N. J.

**STANLEY
MITRE BOX**



On the edge of the Solid Metal Base (where they will always remain correct), degrees are accurately graduated.

As the Swivel will automatically lock at any point, the operator can quickly set the Saw to cut the angle needed.

For duplicating work, a stock guide can be screwed in a threaded Plate, inserted in base board, making a perfect length gauge.

With these new features, the Stanley Mitre Box is more than ever a necessity to all wood-workers.

For full description, sizes, and prices, write for Catalogue No. 34.

Sold by all Hardware Dealers.

Stanley Rule & Level Co.

New Britain, Conn., U. S. A.



"A Bit Of Utility"

Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

The Progressive Mfg. Co.

Torrington, Conn.



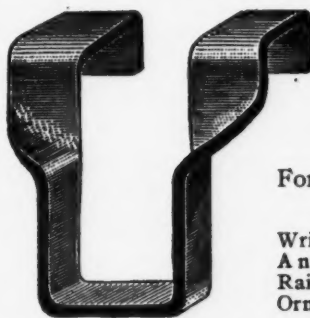
"Last a Lifetime and give Satisfaction to the End"



The Celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequaled by any other make for keen, hard, smooth cutting edges. If your hardware dealer does not handle

The Celebrated Barton Tools, send direct for Catalog. Be sure and specify "CARPENTER'S CATALOG"

MACK & CO., 20 Brown's Race, Rochester, N. Y.



The Perfect Joist Hanger

For Concrete Blocks, Wood and Iron Beams.

Write for estimates on Beams, Angles, Anchors, Hangers, Railings, Iron Fence and all Ornamental Iron Work.

THE BERGEN IRON WORKS, Inc.

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JOIST HANGERS

For Wood Timbers, Concrete Blocks, or Iron Beams,

Many Sizes in Stock

Special Shapes to Order

Steel Post Caps Wire Floor Clips

STRAPS, BOLTS, PIN ANCHORS

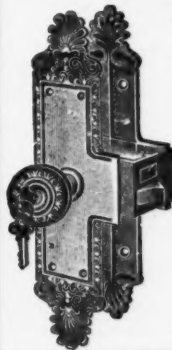
BLACKSMITH WORK AND IRON FOR CARPENTERS' REQUIREMENTS

Telephone Yards 403

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35th and Ashland Ave. CHICAGO, ILL.

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Don't buy your Builder's Hardware before you get our prices. Send for our Catalogue and Net Price. We will mail it Free to Contractors and Builders.

Rehm Hardware Co.

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"Venetia" Sheathing—The Best Red Rosin Sized Sheathing made.

U. S. Fibre Plaster Board—A paper substitute for plaster; can be painted, varnished or kalsomined.

Red Hawk Red Rope Roofing Paper.

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"No Noise" Felt—The best sound deadener and damp-proof protector made.

Black Hawk Water-Proof Sheathing

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COMPLETE BATH ROOM OUTFITS \$27⁵⁰ TO \$125⁰⁰



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SANITARY!**

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Everything in Plumbing Supplies sold direct to you at lowest factory prices. Any man handy with tools can install our plumbing fixtures. We have developed a most perfect all-iron-pipe system of plumbing. Our book "Plumbing Made Easy" sent free to customers.

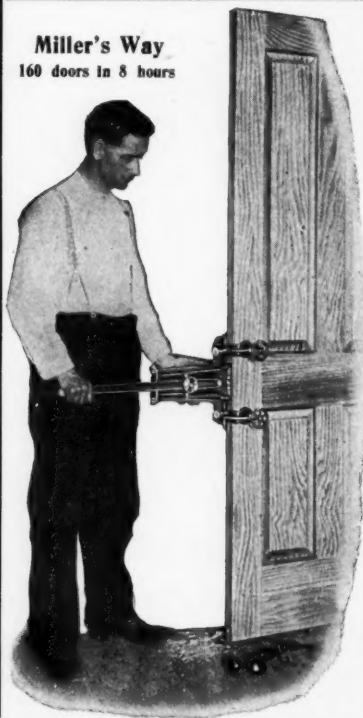
PNEUMATIC WATER SUPPLY SYSTEMS from \$40.00 up. Just the thing to supply running water in the suburban or country home. Fifteen minutes' pumping each day will supply the average family. Satisfaction guaranteed or money refunded.

HEATING APPARATUS.—Don't imagine you can not afford a modern Hot Water or Steam Heating Plant for your home until you have our figures. Our heating plants are absolutely guaranteed. Money refunded at any time within one year if not completely satisfactory. We make working plans and lend tools to work with. Send blue print or sketch for estimate. Ask for our Catalogue No. 108, full of bargains from cover to cover.

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160 doors in 8 hours



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A substitute for Lath and Plaster
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It is Warmer, more Durable,
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Manufactured all 4 ft. wide, 8, 9, 10,
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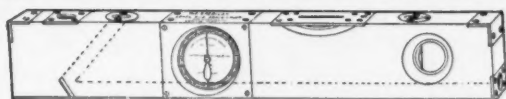
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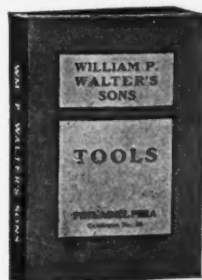
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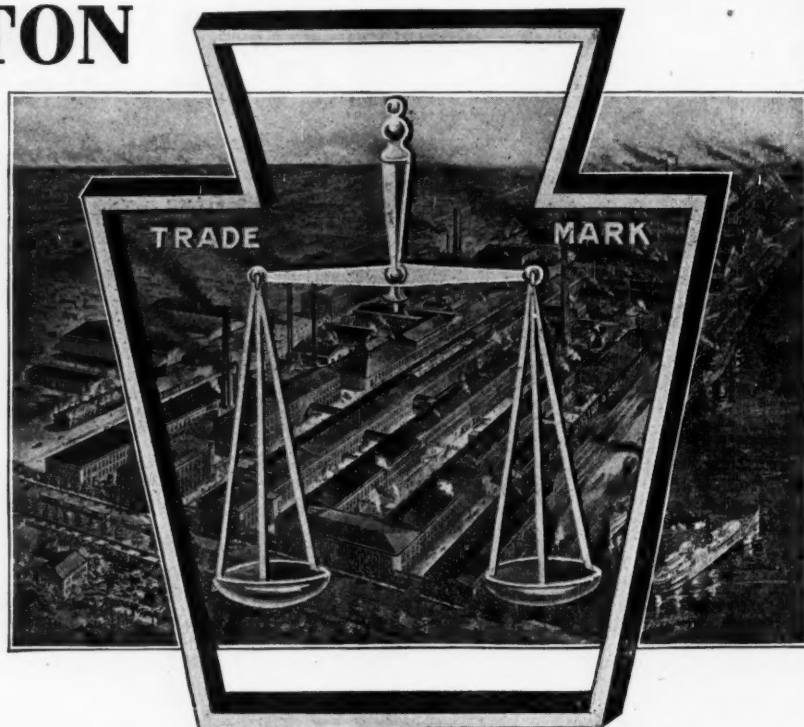
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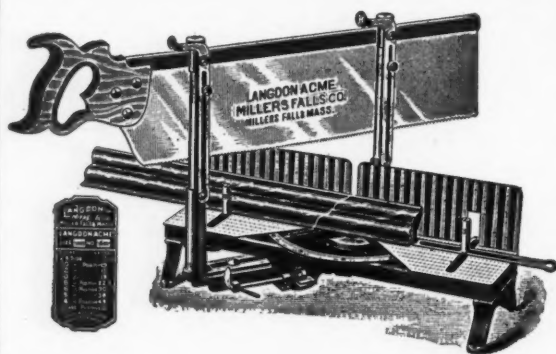
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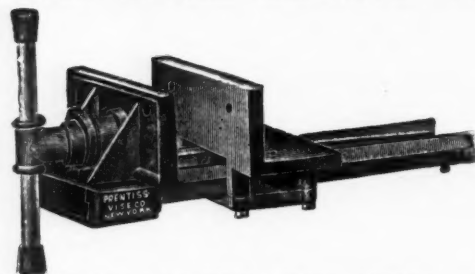
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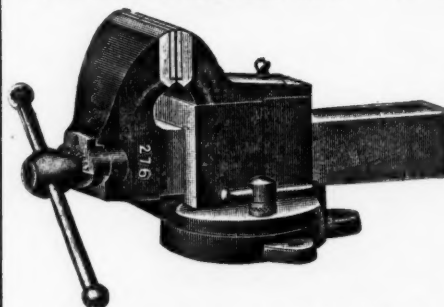
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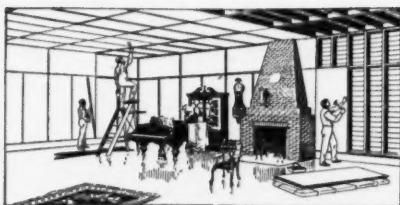


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The Modern Wall and Ceiling Material
Takes Place of Both Lath and Plaster
The carpenter nails it direct to the studding. It is then painted. No waiting for plaster to dry. Susceptible to finest decoration. "Determining Facts in Wall Building and Decoration" tells about the six kinds. A copy and sample free. Write today.
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NEVER BREAK

BECAUSE THEY ARE MADE OF VERY HEAVY GAUGE METAL AND PERFECTLY CONSTRUCTED

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The Champion Safety Lock Co.
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Don't Ask the Dealer for Sash Cord. Ask for
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substitute, as our name is stamped in red on the cord. Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord and has been the standard since 1868. No other is just as good.

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Are sold DIRECT to Builders, Contractors and Mills at prices under the common ordinary goods.

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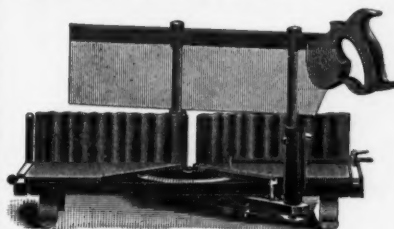
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Automatic Stops for holding up saw.
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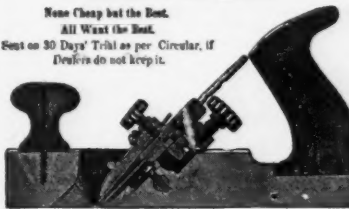
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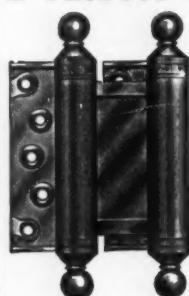
The first man in Okla., Tex., Colo., Neb., Ill., Ind., Pa., and N. J., outside of Vineland, who sends us this advertisement, and the addresses of 10 carpenters, gets a \$3.25 Self-Setting Plane free by paying express. All others get a hard, tough Carpenter Pencil and circulars free. One gross of these pencils with your card stamped on them opposite ours for a \$3.00 money order. The lucky men to get planes free last month were: Ort. L. Stranger, Bellevue, O.; Roy L. Smith, Galesville, Wis.; G. H. Dudley, Mission Hill, S. D.; H. S. Wade, Azusa, Cal. For before last month, see this paper, page 433, July.

All who answer this ad. are benefited, either by getting a good pencil and circulars, or by getting a Self-Setting Plane that saves time, trouble, temper; doing its work easier, better and quicker. Who's the next lucky man?

GAGE TOOL CO., Vineland, N. J.

CHICAGO SPRING BUTTS

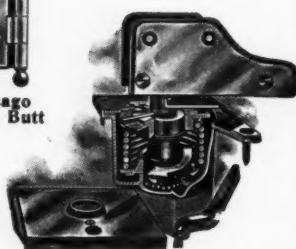
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Chicago Ball-Bearing Floor Hinge

Chicago Spring Butt Company

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LOOK!
LISTEN!**

"Pullman" Spring Sash Balances

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Pivoted or Double Hung Automatic Closing.
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to know us; to get our catalogs and see what we have to offer in goods and prices. Get a catalog and look it over. It will put you under no obligation and you will not be bothered by a lot of advertising matter that is no good to you

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BUILDERS' HARDWARE—Contractors' Edition. 198 pages of the finest hardware in the world. Shows everything necessary to equip any building. Sent free to contractors, architects or owners of proposed buildings.

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**There can be no
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Has been the Standard
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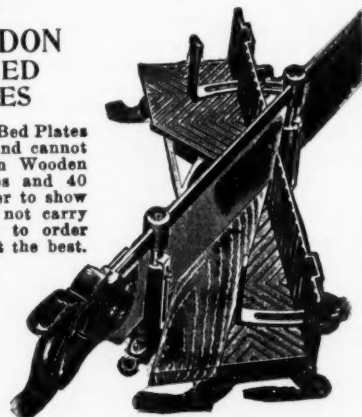
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THE NEW MARSH-LANGDON AND IMPROVED MITER BOXES

All have corrugated Metal Bed Plates—same are ground true and cannot warp and split like thin Wooden Plates. Made in 4 sizes and 40 numbers. Ask your dealer to show you one, and if he does not carry them in stock, ask him to order one for you, for you want the best.

Write for circulars and prices.

Manufactured only by
H. C. MARSH
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**World's Greatest
Building Paper**

American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill., under the Act of Congress of March 3, 1879.

Published monthly by

American Carpenter and Builder Company

185 JACKSON BOULEVARD, CHICAGO.

VOL. V SEPTEMBER, 1908 No. 6

The AMERICAN CARPENTER AND BUILDER is issued promptly on the first of each month. It aims to furnish the latest and the most practical and authoritative information on all matters relating to the carpentry and building trades.

Short practical letters and articles on subjects pertaining to the carpentry and building trades are requested.

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Furnished on application. The value of the AMERICAN CARPENTER AND BUILDER as an advertising medium is unquestioned. The character of the advertisements now in its columns, and the number of them, tell the whole story. Circulation considered, it is the cheapest trade journal in the United States to advertise in. Advertisements, to insure insertion in the issue of any month, should reach this office not later than the 20th of the month preceding.

DEFEAT is for those who acknowledge it.

YOU can't keep success away from the man who works and is on the level.

HAPPY is the man who has a decent business, who pursues it decently and who lives honestly on the profit that it brings.

FOLKS who never do more than they get paid for never get paid for any more than they do.

MOST of the grumbling is done by people who sit down in the gloom and want the sunshine to come and find them.

WHAT good did it ever do you to hurt someone's feelings? Did saying a mean thing ever get you anything and, if it did, were you satisfied and happy with what it got you?

The Gyroscope House

THERE are some advantages as well as some disadvantages to the house which the Bay-side (L. I.) man is building on the turn-table plan as described last month. Suppose a man should come home feeling a little shelf worn about 2 in the morning. Then suppose his wife, hearing him approach, should set the machinery in motion, so that he would have to chase his front door key-hole!

Gratifying

TO THOSE who have the business prosperity of the nation at heart, the steady improvement of building conditions is certainly encouraging. From all parts of the country reports are coming in that the "Build Now" publicity campaign is being vigorously pushed by contractors and dealers, by means of personal letters, local advertising and newspaper comment.

This is, of course, producing the desired result; for the benefits of *building now* are too great and sure to be lightly passed over when once they are known.

A building material dealer out at Franklin, Neb., roused into activity by the "Build Now" opportunity, has mailed the following unique letter to 350 possible customers; it is worth studying and imitating:

"Friend John: Your letter came some two weeks

ago, and you will excuse my not answering before now, but it was purely for the want of time. You know, in the absence of my best girl, I am *it* first, last and the middle, too. There is the old brindle to pail, the calf and the pigs to feed, dishes to wash, sweep out and dust. Well, I don't know what not, but it seems to be all waiting for Asa. Oh, yes, and there are the eggs to gather and market. Say, I believe there is a fortune in chickens, all right, but the 'deuce' is to get it out of them. Still, I have a sneaking notion to quit the 'boards,' borrow a little money (if I can) and go into the business, on a big scale, of course.

"Well, now, about your question as to why *you should build now*, as you saw it in the *Sentinel*. You see it is this way: Money is plentiful again to what it was! Building material of all kinds cheaper! Hardware cheaper, labor cheaper and better; better for the reason that only the best mechanics are at work. The scrub carpenter has gone to work at something else. You can build cheaper now than you could any time within the last five years, or will in three months from now. Just see the following bill and judge for yourself:

"25 sacks cement.	"10 2-8 6, 8 3-8 best W. P.
"3,000 feet dimension, No. 1.	doors.
"2,000 feet shiplap, No. 1.	"10 22x28 windows.
"1,600 feet sdg., best white	"4 rolls building paper.
pine.	"400 feet base and casing.
"8,000 shingles, Ex. X a X.	

"A year ago a man paid us \$356.65 for it. Today we would duplicate it at \$293. How does that look to you? That's why I urge you to go at it at once. It is money in *your wallet*—not mine. It is better to build this year than next year, to wish you had. You need not worry about the outcome of the corn crop, or the election either. You will have plenty of corn and I predict a good price, too. I would get busy at once. If you can't find a carpenter come down and we will assist you. * * * * Quick sales and small profits is our motto. Well John, I must come to a close. Let me hear from you often. With the best of wishes, I am, your old friend,

"ASA SCHUMACHER,

"Manager for Citizens' Lumber Company."



Problem for Architects

ALTHOUGH this is an age of brilliant achievement in the departments of engineering, architecture and physics, there is one problem which, though apparently simple, has baffled all sorts of scientists. This is the acoustics of halls for music or public speaking.

It is said that the purchase of a good razor is entirely a matter of good luck, the appearance, mounting and price being in most cases misleading. Something like this is true in regard to the construction of these halls. There are halls with admirable acoustic properties, but there is no positive assurance that in imitating them the same satisfactory results will be

obtained in the new music or lecture hall.

From a special article in the New York Evening Post it appears that there are serious troubles on this score in the east. One case is that of Rev. Dr. Parkhurst's church in Madison Avenue, New York. Another is St. Paul's chapel at Columbia university; still another a building included in the great complex of the naval academy at Annapolis. Architects, university professors, and an "expert in acoustics" are all exerting themselves to cure in some way the acoustic faults of these halls.

The remedies for this evil are as numerous as the cures for rheumatism. The late Professor Hood of Harvard attempted to doctor a defective hall by hanging old maps all around the walls. Some years ago the method relied on was to string invisible wires overhead. The New York expert is said to be achieving a partial success by hanging overhead an invisible canopy of silk netting. But it is very clear that architects, professors and experts are all greatly puzzled.

Nobody can blame the architects and physicists, but the world awaits with great impatience the discovery of the secret of an acoustically perfect music hall and church.



"I Don't Know"

I DON'T KNOW.

The three hardest words in the English language to put together. It takes courage—genuine nerve—to make use of this innocent word combination.

We are ashamed of the fact that we don't know. We want everyone to think that we do know—everything.

I don't know;—it's a phrase that has made liars of us all.

I asked a hardware merchant how blue steel was made. "Blue steel—oh, yes, you see, they take common, ordinary steel and melt it up with blue vitriol—that gives it toughness and a bluish tinge."

He was ashamed to admit that he didn't know.

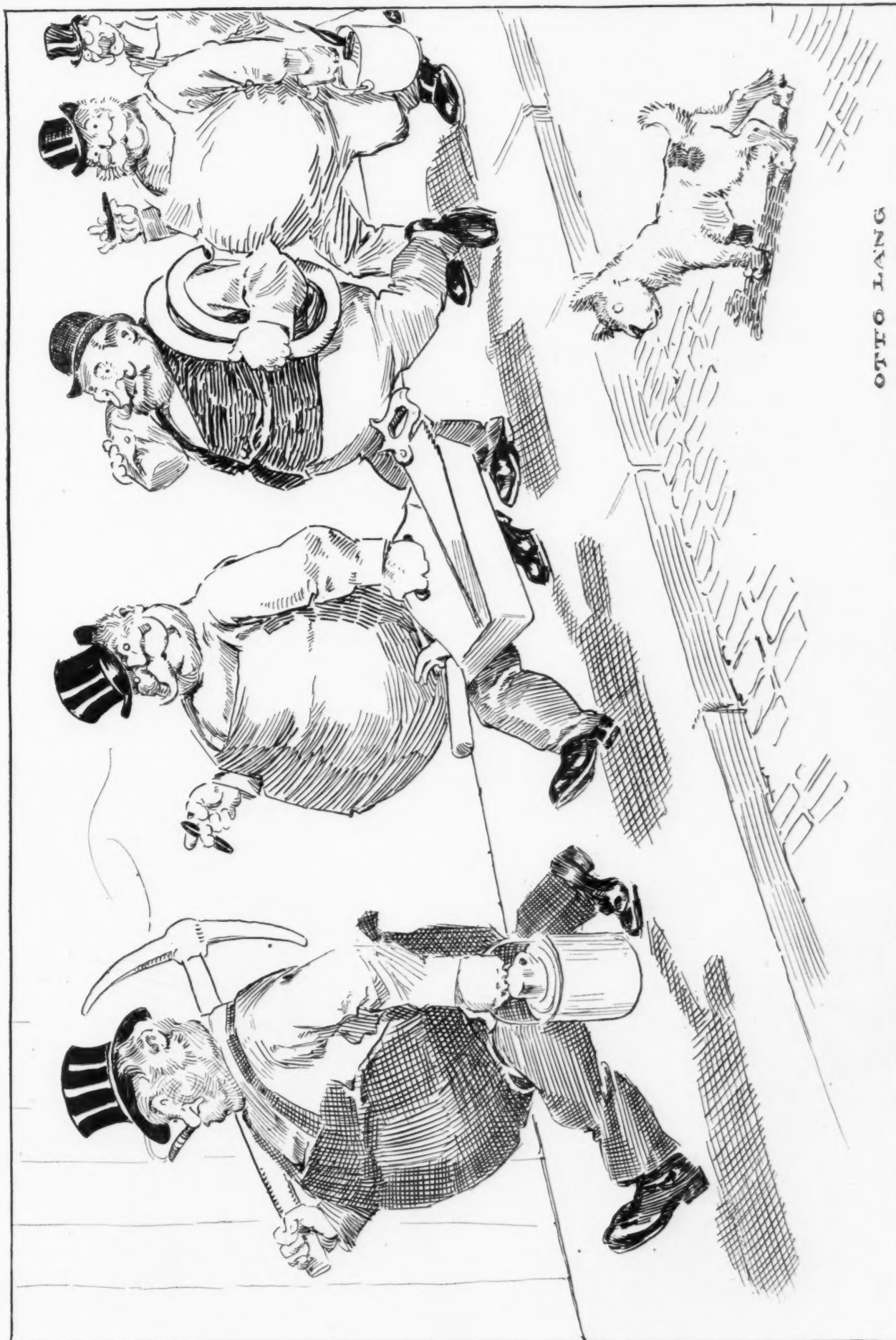
A teacher, in response to a little girl's question regarding the derivation of the word hamlet (meaning a small village), in want of a better answer, replied that it was "derived from one of Shakespeare's famous characters."

She was ashamed to admit that she didn't know.

A thousand times a day we are ashamed to admit that we don't know. We mistake a lack of information for a lack of culture. We aspire to a thirty-third degree in the Order of Know-It-Alls, but for all our aspiring we merely get the goat, in the goat's favorite buttin' place.

Where is the harm in not knowing? The shame comes from the pretense and deception. How is one ever to learn if not by questioning? Frankness is a key to success.

The present day business world needs men who know and who also know that they don't know.



OTTO LANG

Anti-Fat Cure for the Idle Rich as Suggested by a Mechanic



Modern Suburban Homes

By Will Lawrence Hammons

THE building of suburban homes near the large cities is one of the most active branches of city construction work. Certainly it is one of the most interesting and of the greatest general benefit. The suburbs escape the severe, though no doubt necessary, building laws, which demand that all structures in the city proper be of brick, stone or other fireproof material. Block after block of brick and stone flats may be erected; and, though modern in every way, they can never compare in attractiveness and home-like suggestion with the sections of cozy suburban dwellings of frame construction.

Cheerfulness, comfort, and beauty are far better expressed in home construction by the skilled carpenter and his material, than by any other of the artisan's trades. The use of wood in residence work permits

of an endless variety of design, harmony and strong contrast in the color scheme, and offers the broadest possibilities to the skilled mechanic. It is the most economical; and is in itself the most truly natural of all the materials used in building construction.

The opening of new residence subdivisions is usually carried out by real estate firms, that purchase large tracts of land, sometimes putting in the public improvements and then selling the vacant lots to private parties. But near St. Louis, Mo., one man has done more than all this. Herman C. G. Luyties has conceived and carried out one of the most beautiful and modern suburban residence sections to be found anywhere. At Kenwood Springs, the first feature towards making an ideal residence section was furnished by Nature. Rolling land, beautiful forest trees,



The Secret of Success in Suburban Real Estate Projects—"For Sale on Easy Terms"

spring water, high ground, fine drainage and fresh air are the natural gifts and attractions. The work at Kenwood Springs has been carried out with the idea of providing an attractive, modern suburban residence section for people of moderate means.

All streets have been paved, cement sidewalks built,

Brick has been used only when a touch of contrast was desired; occasionally a gable is plastered with rough cement, a combination well suited to frame construction. It is the cozy bungalow and modest cottage that adds charm and beauty to nature's surroundings. On a hill or in a hollow, on level or rough ground,



"The Bungalow Club"—Center of Social Life at Kenwood Springs

sewer, gas and electric light service installed, and all public utilities provided. At the entrance to all streets, attractive, well built archways and columns have been built. A handsome church is under construction and a modern school building has been completed. A large Arcade of unique design provides commercial necessities. Adjacent to the car lines a small park is being built—with trees and flowers, lagoon, rustic bridge, winding paths, mineral springs and even a herd of deer.

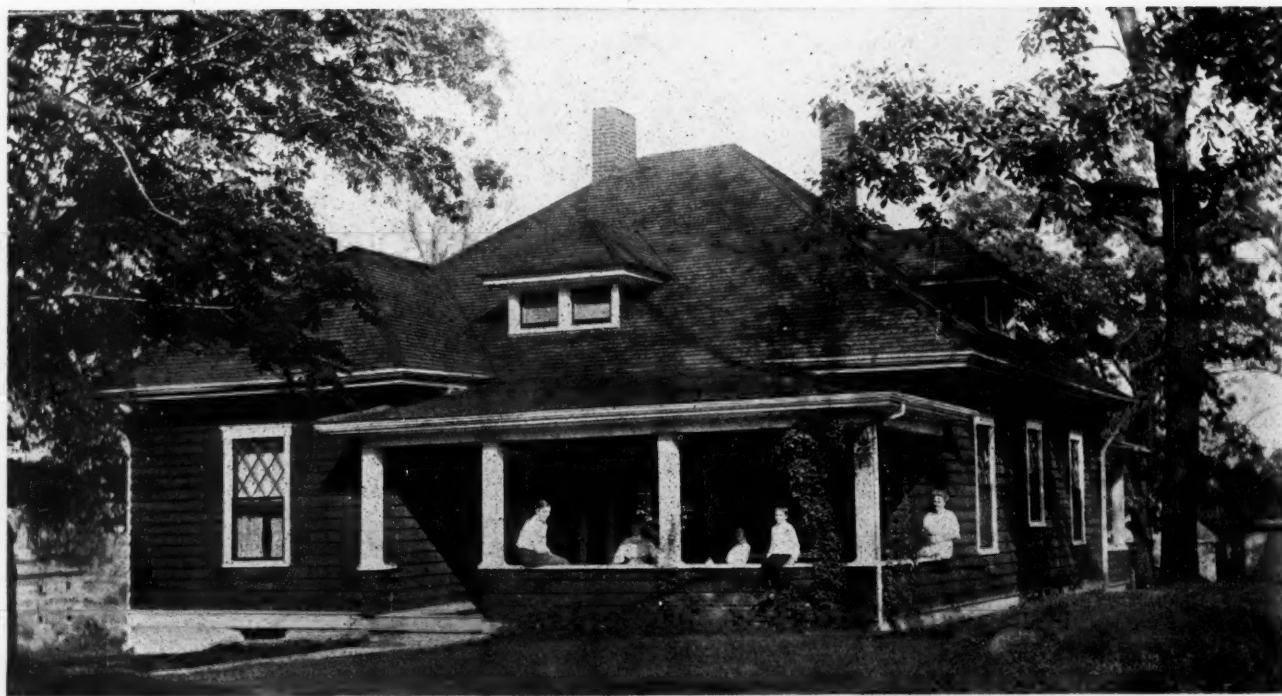
No big, glaring, unhomelike houses have been built.

under the spreading oak or amid vines and bloom; it is the cottage and bungalow that suits every environment.

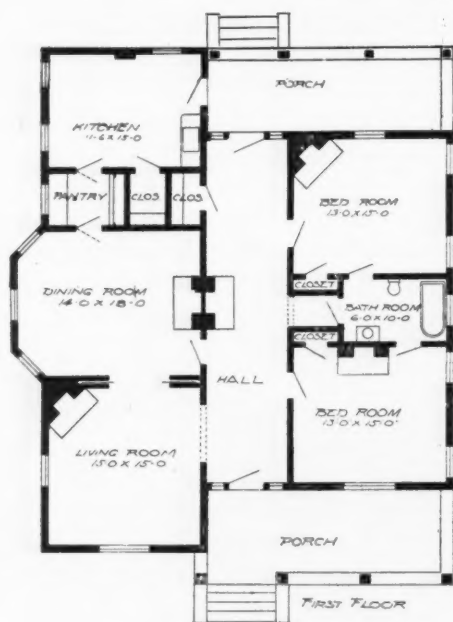
The building up of city subdivisions offers many interesting and surprising developments. For a while the outward growth of the city may be in a certain direction, resulting in sudden increase of nearby real estate; then, just as suddenly, it may stop, blocked by some manufacturing plant, railroad, or natural disadvantage. It may then start in a new direction, leaping past some undesirable neighborhood, and



Charming Little Story and a Half Cottage



Porch Vines and Massive Oaks Add to the Beauty of this Bungalow



Floor Plan of Bungalow at Top of Page

spring up anew in a corn field, truck garden section, or cultivated farm.

Nature, and the untiring efforts and resources of one man have been the cause of the building of beautiful Kenwood Springs. Such enterprises are a blessing to humanity. Unless a man, or body of men working together, carry such undertakings to completion they would never be done.

The accompanying photos and plans give an idea



Unassuming Homelike and Cheerful—Contains 7 Rooms

of the attractive, well arranged homes, and of the beautiful surroundings at Kenwood Springs. Many of the houses are entirely of frame construction, with sawed beveled siding, and shingles, on the exteriors. The siding is always stained, while some houses are of smooth painted weather boarding. The interiors are generally finished in craftsman stains or white enameled.

There are a number of cozy bungalows found at Kenwood. One is illustrated. It is an attractive, yet unassuming bungalow of five rooms. The white trim gives a fine note of contrast with the bevel siding of



Simple Square Design of Great Merrit



Substantially Built—High and Dry—Contains Seven Rooms and Basement

sawed surface, and the weathered shingles of the porch and roof. The interior finish is of yellow pine, with mission stain. The big porch looks pleasant and inviting.

The possibilities of architectural adaptation to the

in the front porch, with its plain massive pillars. The small-paned windows add to the Colonial effect.



London Builders Aghast

A recent dispatch from England states that Harry Gordon Selfridge, late of Marshall Field & Co., Chicago, who is now building a huge department store in London, has broken down one of the ironbound conventions of the London building trade.

Instead of shutting out the public from the new building with the stereotyped notice, "No admittance except on business," Mr. Selfridge actually invites the passerby to come in and watch the building grow.



Showing the Beauty of a Shaded Site

natural surroundings are well shown in the beautiful residence of Mr. Hamilton Gibson. The exterior is entirely of broad shingles, ranging in width from seven to twelve inches, and stained to a beautiful weathered effect. There is a suggestion of hospitality



Adaptation of the Colonial Style

For the safety and comfort of the public a platform has been provided, and thousands have taken the opportunity to see how a great building is constructed of steel on the American plan.



Doubly So

"Do you believe that Rockefeller's money is tainted?"

"You bet I do—'taint yours and 'taint mine."



A man feels awfully rich when he's got a few dollars his wife doesn't know about.



A Shingled Bungalow

Present Cost of Building

WHAT IT COSTS TODAY TO BUILD THIS DESIRABLE SEVEN ROOM HOUSE IN OMAHA, NEBRASKA—THE PROPER WAY OF LISTING MATERIALS AND LABOR SHOWN

By I. P. Hicks

A VERY attractive, homelike residence is illustrated herewith, the floor plans being shown. It is a seven room house with reception hall, bath, pantry, closets, etc., and is one of the modern up-to-date class that is now a very popular design in Omaha. A complete itemized bill of material, at current Omaha prices, is given. These prices will, of course, vary slightly in different parts of the country; still the estimate in detail is an interesting feature that shows how to make an estimate of the cost of construction in building a house of this kind. The front

2	6x 6x14 ft. posts	84
6	6x 6x16 ft. sills	288
4	6x 6x14 ft. sills	168
20	2x 4x14 ft. basement partition	180
38	2x10x14 ft. first floor joists.....	874
6	2x10x16 ft. first floor joists.....	162
8	2x10x18 ft first floor joists	240
13	2x10x16 ft.. second floor joists.....	351
26	2x10x14 ft. second floor joists.....	598
13	2x10x18 ft. second floor joists.....	390
8	2x 8x10 ft. porch joists	108



Very Attractive Residence—Cost \$3,875 at Omaha, Neb.

hall, stairs, parlor and dining rooms are finished in plain red oak and balance of the house in yellow pine.

Excavation and Masonry

200 yds. excavating at 25c.....	\$ 50.00
270 cu. ft. concrete block wall, 25c.....	69.00
Porch piers	16.00
11,385 brick laid in foundation, \$12.00.....	134.62
39 lineal feet flue, \$1.....	39.00
110 yards cellar cementing, 50c.....	55.00
Total excavating and masonry.....	\$ 363.62

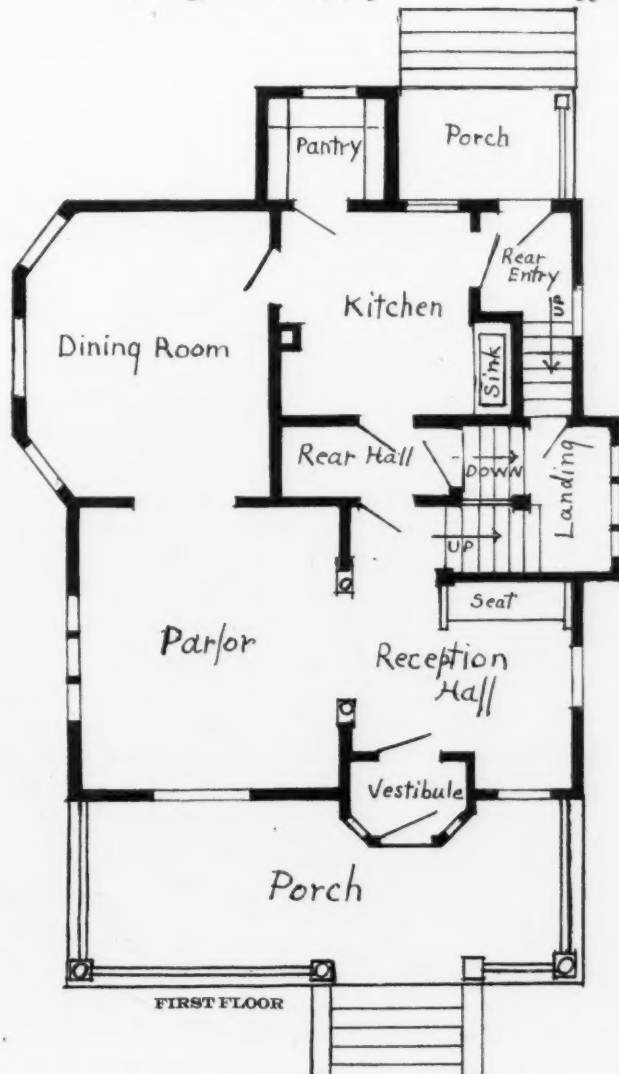
Lumber Bill

	Feet
2 6x 8x16 ft. girders	128

16	2x 8x14 ft. porch joists	304
26	2x 6x16 ft. ceiling joists	416
26	2x 6x18 ft. ceiling joists	468
12	2x 6x12 ft. ceiling joists	144
120	2x 4x18 ft. out side studding	1,440
60	2x 4x18 ft. first story partitions.....	720
70	2x 4x16 ft. second story partitions.....	770
50	2x 4x16 ft. plates	550
20	2x 4x16 ft. ceiling joists, porches.....	220
24	2x 4x12 ft. rafters, porches	192
32	2x 4x16 ft. for dormer windows.....	352
4	2x 6x24 ft. hip rafters	96
52	2x 6x18 ft. rafters	936
20	2x 2x18 ft. furring	120

20 1x3x18 ft. backing	90
20 1x4x12 ft. bridging	80
30 1x6x12 ft. braces	180

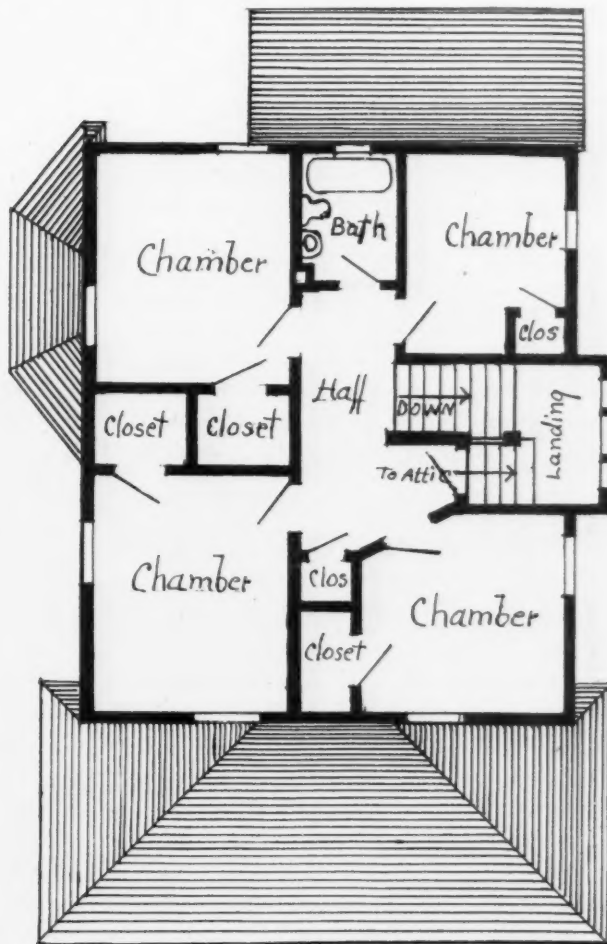
Total feet framing lumber	10,649
10,649 ft. framing lumber, at \$25.....	\$ 266.25
2,260 ft. No. 2 Y. P. 8 in. shiplap for rough floors, \$25	56.50
2,700 ft. No. 2 Y. P. shiplap, 8 in. by 16 ft., for outside walls, \$25.....	67.50
2,200 ft. 1x8x12 to 16 ft. No. 2 Y. P. sheathing, for roofs, \$25.....	55.00



FIRST FLOOR

16,000 clear red cedar shingles, \$3.75.....	60.00
360 ft. 1x4x10 ft. clear fir flooring for porch, \$40	14.40
80 ft. 1x4x12 ft. clear fir flooring for porch, \$40	3.20
360 ft. 5/8x4x10 ft. No. 1 Y. P. ceiling, \$30	10.80
600 ft. 5/8x4x12 to 18 ft. No. 1 Y. P. ceil- ing, \$30	18.00
700 sq. ft. 1x12x16 ft. clear fir finish, \$40.	28.00
200 sq. ft. 1x8x16 ft. clear fir finish, \$40.	8.00
100 sq. ft. 1x6x16 ft. clear fir finish, \$40.	4.00
100 sq. ft. 1x4x16 ft. clear fir finish, \$40.	4.00

100 sq. ft. 1x10x16 ft. clear fir finish, \$40.	4.00
1,100 ft. No. 1 V. G. 1x2 1/4 face yellow pine flooring, \$40	44.00
1,100 sq. ft. No. 1, 8 in. Y. P. shiplap, attic floor, \$27	29.70
360 ft. 3/8x2 1/4 face hard maple flooring, \$50	18.00
750 ft. 3/8x2 1/4 face plain red oak flooring, \$65	48.75
180 ft. 1 1/4x12x16 ft. clear fir finish, \$40.	7.20
Total lumber bill	\$ 747.30



SECOND FLOOR

Mill Work

3 porch columns, for front, \$3.50.....	\$ 10.50
1 porch column, rear	1.50
2 brackets, front, \$1	2.00
3 brackets, stair landing, \$1.25.....	3.75
1 piece porch rail, bottom, 12 ft., 7c.....	.84
1 piece porch rail, bottom, 4 ft., 7c.....	.28
1 piece porch rail, bottom, 16 ft., 7c.....	1.12
1 piece porch rail, top, 12 ft., 7c.....	.84
1 piece porch rail, top, 4 ft., 7c.....	.28
1 piece porch rail, top, 16 ft., 7c.....	1.12
1 piece porch rail, top, 5 ft., 5c.....	.25
1 piece porch rail, bottom, 5 ft., 5c.....	.25
220 lineal ft. porch baluster, 1 3/4x1 3/4, 2c...	4.40

American Architecture

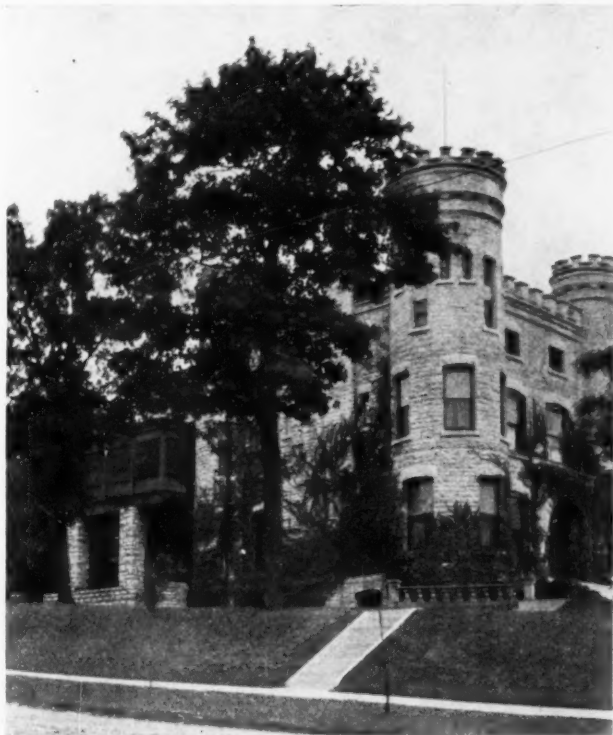
By Herbert Shearer

ONE great charm of American cities is the diversity of the architecture seen in the residences. Each owner of a house and lot is apparently a law unto himself in regard to the kind of house he builds, its position on the lot and the final embellishments. For the most part American houses are neat, tasty and attractive although some may be rather conspicuous while their neighbors are modest and retiring in appearance.

Generally speaking, American independence in this respect is to be commended; but occasional absurdities are to be found here and there which are especially noticeable. The house represented by the two views is a splendid residence, nicely situated on an elevation overlooking one of the best resident sections in the South part of Chicago; but the owner has made one very noticeable mistake in attaching what might be

queer mixtures in the architectural styles used.

It is no more necessary to have the different buildings along a street built after the same lines than it is to have all men of the same shape or trees of the same variety, but in order to secure a pleasing effect we must have some regard for harmony. One tree



Front—Dignified Irish Castellated Effect

termed a sort of Chinese palanquin on stilts to the rear corner of an Irish castellated house. The general effect of this residence from the front is one of solidity with pleasing proportions, but the view from the side is rather startling when you get sight of the stilted attachment to the rear right hand corner.

We as Americans have adopted every brand of architecture brought from every odd corner of the earth and have appropriated the various ideas in many ways that never occurred to the originators. Our streets are more interesting because no two houses are alike. In this respect we have struck out an independent course of our own, but we have made some



Side and Rear—Chinese Palanquin on Stilts

may be maple, the next an oak and the third an elm; and the effect may be all the more pleasing because of the contrast; but we would not like to see one tree grafted with limbs from either of the others.

It is the same with houses. We may have any style of architecture that we choose to pick out, but we spoil it when we mix the breeds. A cross between a trotting horse and a draft horse results in a mongrel. We can produce mongrel houses, too.



Metropolitan Tower Bells

Four of the largest and costliest bells in the world are to be placed in the forty-sixth story of the new tower of the Metropolitan Life Insurance Company's building, in Madison Square, and from a position about 650 feet above the pavement, nearly twice as high as any in the world, their deep tones will announce each quarter of an hour.

The largest bell, toned to B flat, will be 70 inches at the mouth and weigh 7,000 pounds; the second in E flat, will weigh 3,000 pounds; the third in F natural, will weigh 2,000 pounds, and the fourth in G, will weigh 1,500 pounds. They are to be mounted on pedestals outside the 46th story.

STEEL SQUARE

ALFRED W. WOODS

How to Use the Steel Square

SHOWING SIMPLE METHODS OF OBTAINING HOPPER MITERS EITHER BY THE USE OF THE STEEL SQUARE OR BY SIMPLE DIAGRAMS—COMPARISON OF THE TWO AS PROOF

IN THE last number, we were talking on hopper cuts, but we did not get through, or say all we wanted to; neither do we expect to finish our talk on the subject in this article,—or the next either for that matter, for there is much that can be said and it is somewhat of a puzzle what to say and what not to say. Our object in this, as in all other work, is to get at the beginning, the foundation head, and when the principles found there are once mastered, they may be readily applied for any polygonal shaped hopper. We realize that the illustrations shown in connection with the steel square may seem hard and not easily

pitch. Following this is shown the sectional view. In this is shown the thickness of the boards and the flare of the sides, which is 18 inches rise or $\frac{3}{4}$ pitch.

Following this are shown the four sides in the knock-down ready to raise up to their respective places in the hopper. The miters will come together and the whole would show just what we started out with,—the plan. To the left is shown the top edge of the board showing its full thickness and the bevel required for the miter; to this is shown the application of the steel square at 12 and 10, coinciding with the angle.

By referring to Fig. 215 it will be seen how these figures are obtained, the blade giving the angle. To the right is shown another method. The figures in this case are 12 and $14 \frac{5}{12}$, the tongue gives the angle.

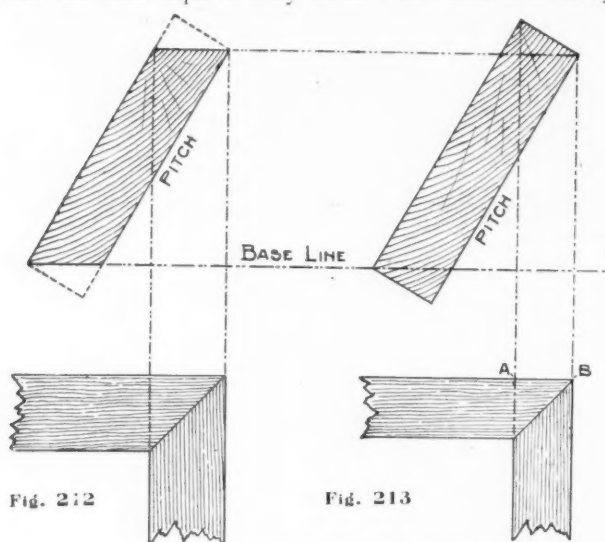
By referring to Fig. 216 it will be seen why these figures are used; it is as follows:

12 is used on the tongue, because it represents the full scale for one foot and $14 \frac{5}{12}$ because that is the length of the co-pitch and this transferred to the blade gives the angle, as shown.

While we are at this point we will give another rule for this cut, which is as follows:

Take the rise on the tongue and the length of the pitch on the blade and the tongue will give the angle. See illustration in Fig. 216, which in this case is 18 and $21 \frac{5}{12}$ which it will readily be seen, gives a line parallel to 12 and $14 \frac{5}{12}$.

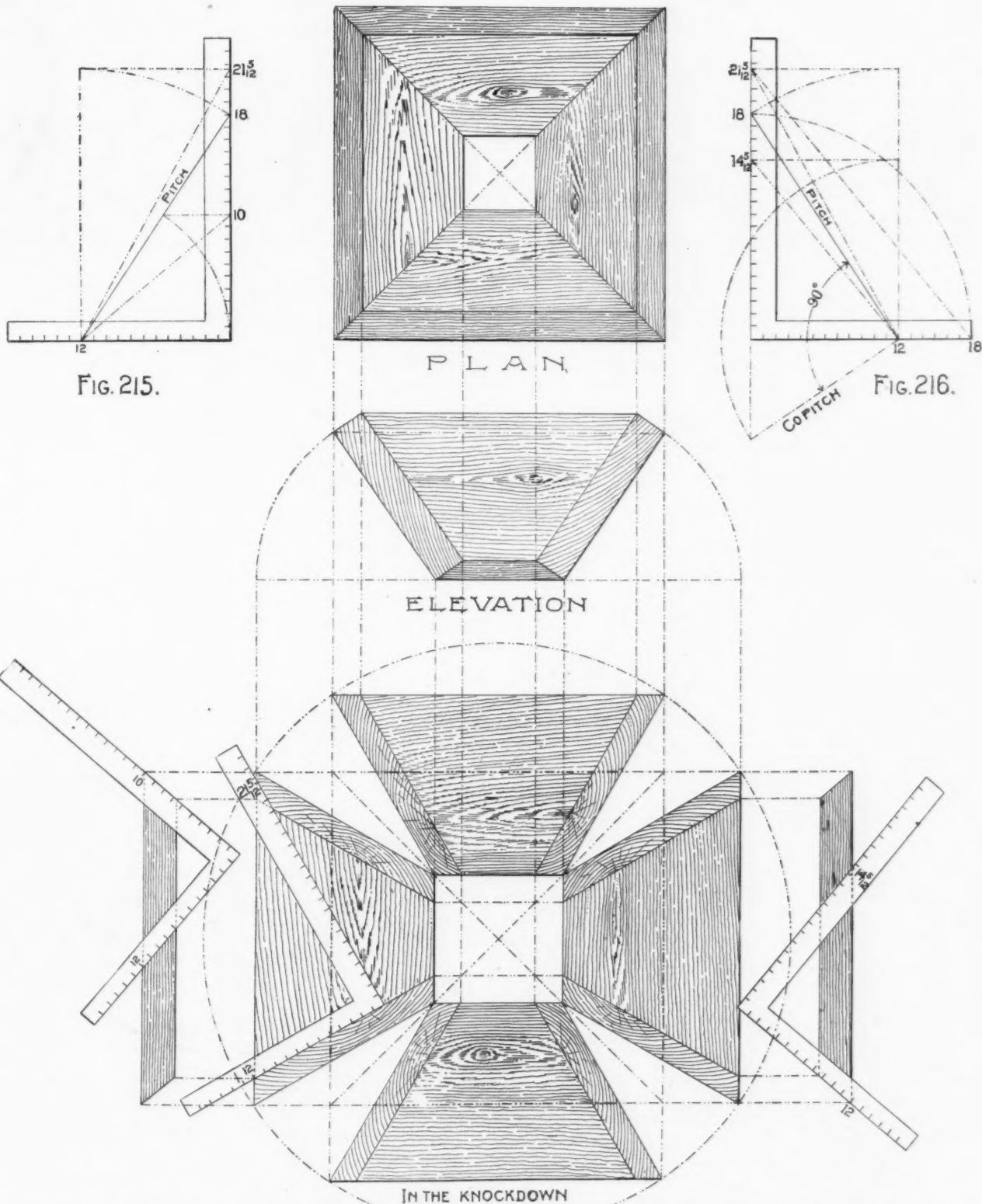
Of course it is not necessary to lay out all of this diagram, or any of it for that matter, when the figures on the steel square are once understood. The diagram is given here in the way of illustration and is complete within itself, as the angles are obtained graphically. The application of the steel square is for the purpose of showing what figures to use to obtain the same results and what determines them. Still there are other ways of arriving at the same result. The most common of which is the miter box. Of these, there are a number of adjustable patent devices now on the market and most all of the better class of carpenters are supplied with one, so that the use of the steel square is rarely considered or even thought of for the general run of mitered work. Yet the miter box like some other useful instruments is an unhandy thing to carry around and is, therefore, not always at hand;



grasped by the average workman, therefore we will try to simplify the work by showing a common square hopper in different positions, as shown in Fig. 214, with the steel square applied for the cuts.

In Figures 215 and 216 are shown why the figures on the steel square are used for an 18 inch rise for a common square hopper. As we have said before, hopper cuts are the same as required for fitting roof boards in the valley, or over the hip; consequently the figures on the square that give the cuts for the roof boards, will also give the cuts for a hopper of same pitch.

Fig. 214 shows a hopper in different views, as follows: Beginning at the top is shown the top view of the hopper. As far as this is concerned, all hoppers look alike because there is nothing to distinguish the

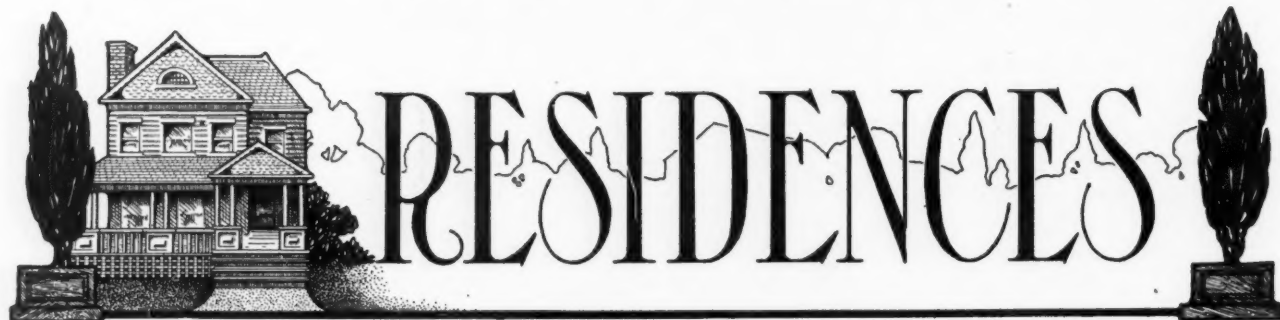


then again quite often only a little work of this kind is wanted, perhaps only to make a single miter. It is well then to know how to apply the steel square or to obtain the cuts by the graphic method, Fig. 214.

Another very simple way, and perhaps the simplest of all, especially where the top and bottom edges of the sides are to be parallel to a level base line, may be easily found as shown in Fig. 212. Then all that is required across the beveled edge is the regular 45 degree miter. The same rule applies to the edge of

FIG. 214.

the boards when not beveled, as shown in Fig. 213, and while the miter is in reality the same as in the previous illustration, the angle across the edge of the board to obtain it is necessarily different, because it is resting at a different plane. In the latter case the distance that the saw lines should be carried around the boards is governed by the plumb lines A-B along the edge of the board. Then after the cut is made and the edge of the board beveled, it will be found that the miter will show the same as in Fig. 212.



Attractive Little Homes

PLEASING LOW-PRICED HOUSES ILLUSTRATED AND DESCRIBED—FULL WORKING DRAWINGS WITH DETAILS OF INTERIOR FINISH

THE cozy little house presented herewith, the work of Mr. J. E. Hammons, of Gary, Indiana, is representative of the type of house for which there is always a great demand. It is a story and a half cottage having seven rooms and a bath. For a good many, this house would probably be made

For those who are limited to a twenty-five foot city lot, this design is good, being twenty-two feet wide, over all. Of course, like any other house, its desirability as a home is greatly increased by a good broad strip of green lawn on all four sides.

The foundation is rough-finished brick, the first



Seven Room House of Neat Design—Cost \$2,000, at Gary, Ind.

more attractive by dividing the second story into two large bed rooms and bath, instead of the three small bed rooms, as shown in the plan. In either case, however, it proves a popular design, providing, as it does, ample accommodations for a family of four, and at a cost, at present prices, of about \$2,000.

story clap boards and the half story and gables are shingled. The coloring is dark olive green with white trimmings.

On the first floor, in front, is the square parlor or living room, to the right is the down-stairs bedroom. Just back of the living room and joined to it with a

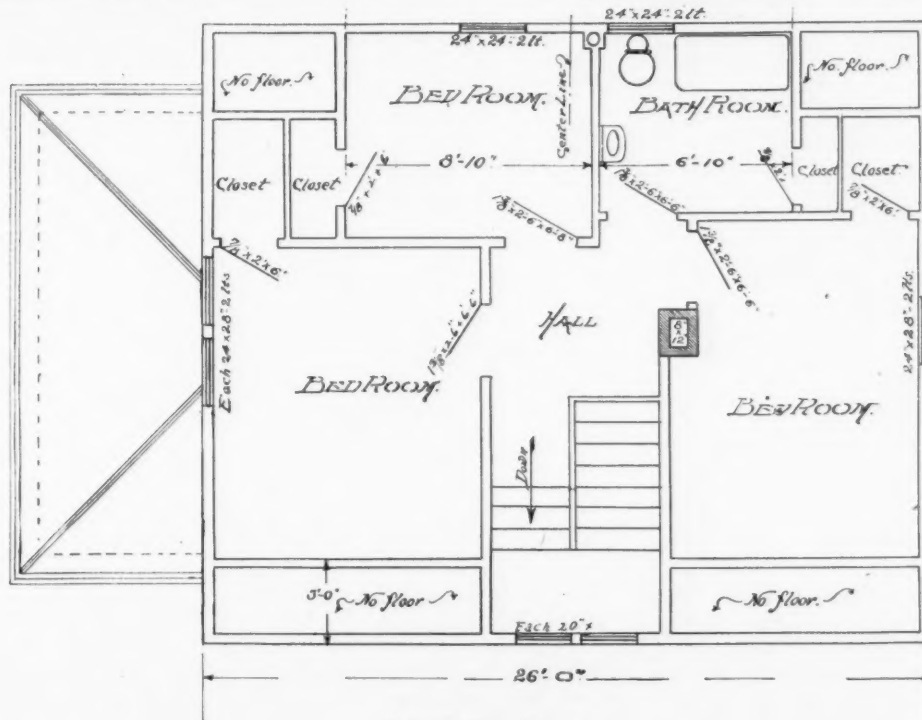
broad cased opening is the dining room. The kitchen occupies the fourth corner, to the right of this.

There is a high basement under the entire house. It is cement finished, divided into two parts by a nine inch brick wall, this separating the fruit and vegetable storage from the coal and wood supply.

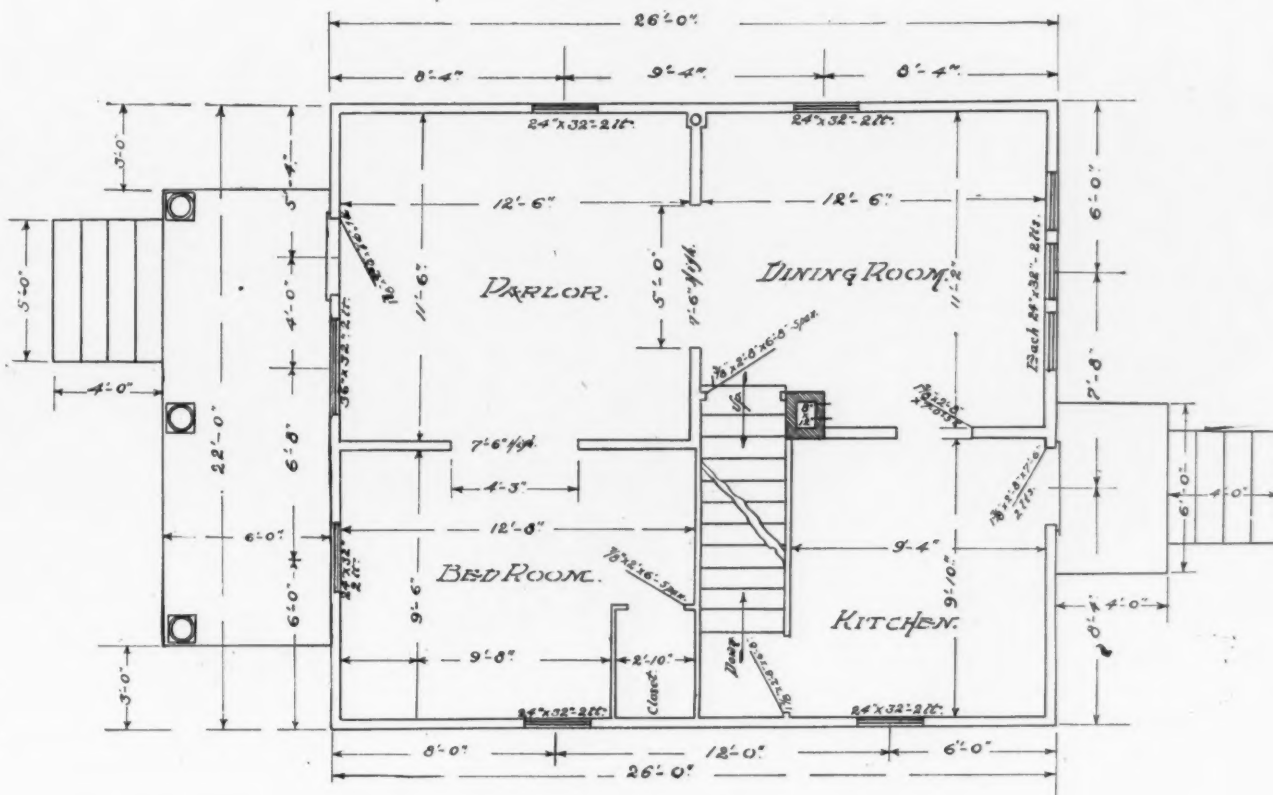
Sewage Purified by Electricity

The installation has just been completed at Santa

Monica, Cal., of the first electric plant for the purification of sewage to be erected in the United States. The system is known as the Harris magneto-electrolytic process. The plant consists of two wooden tanks, each 30 feet long, 2 feet wide, and 18 inches deep. Each tank is equipped with ten sets of electrodes and ten electro-magnets weighing 300 lb. each. The electrodes are fitted with steam pipes for use in cleansing them. The electric energy is supplied by a direct-



Second Floor Plan

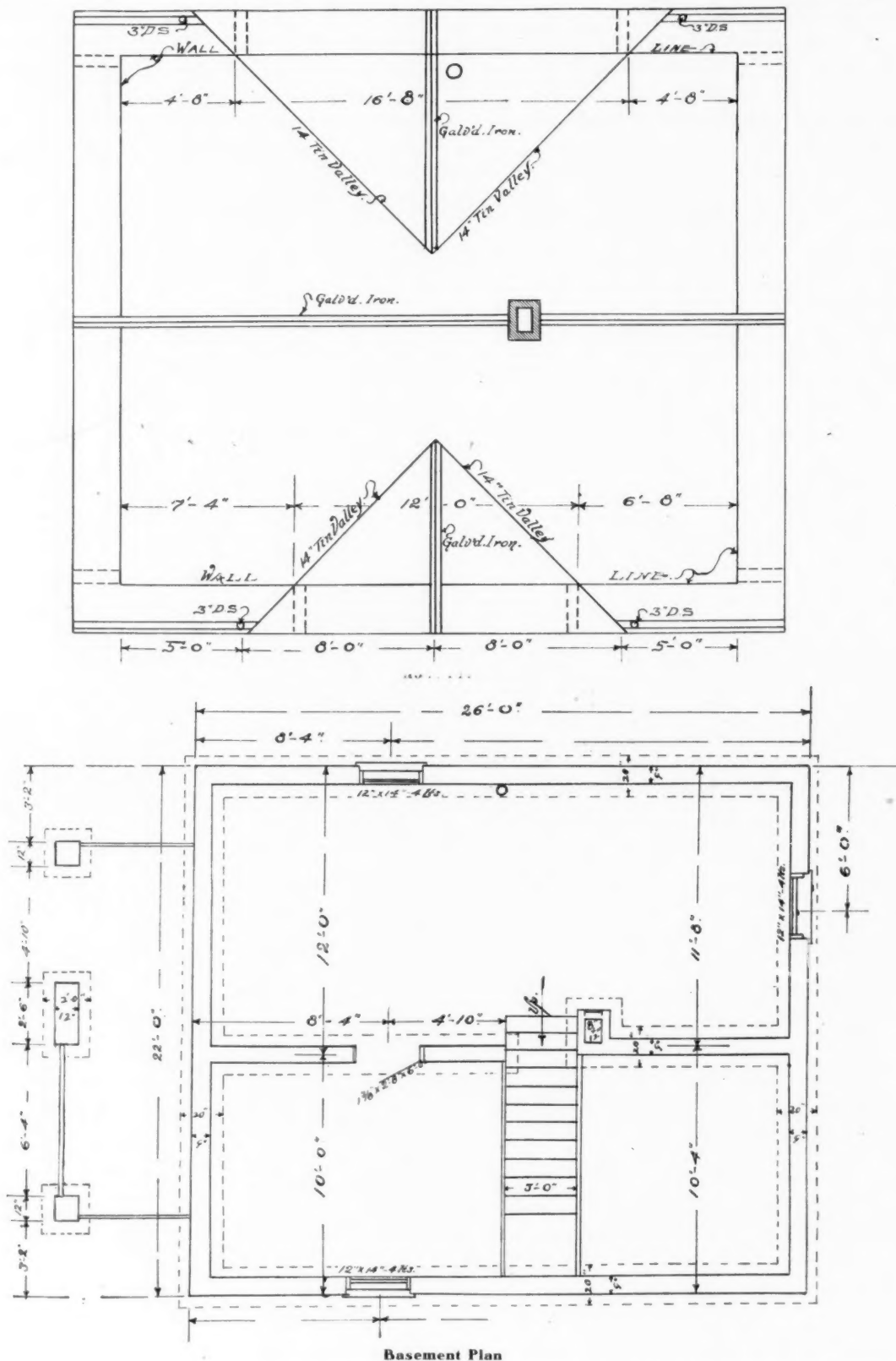


First Floor Plan

current generator, equipped with a motor and separate exciter.

The plant is located in a concrete chamber which

electrodes and the magnets to a depth of three inches. The current is turned on as the sewage flows steadily over the wires and enters the outfall pipe. By that



Basement Plan

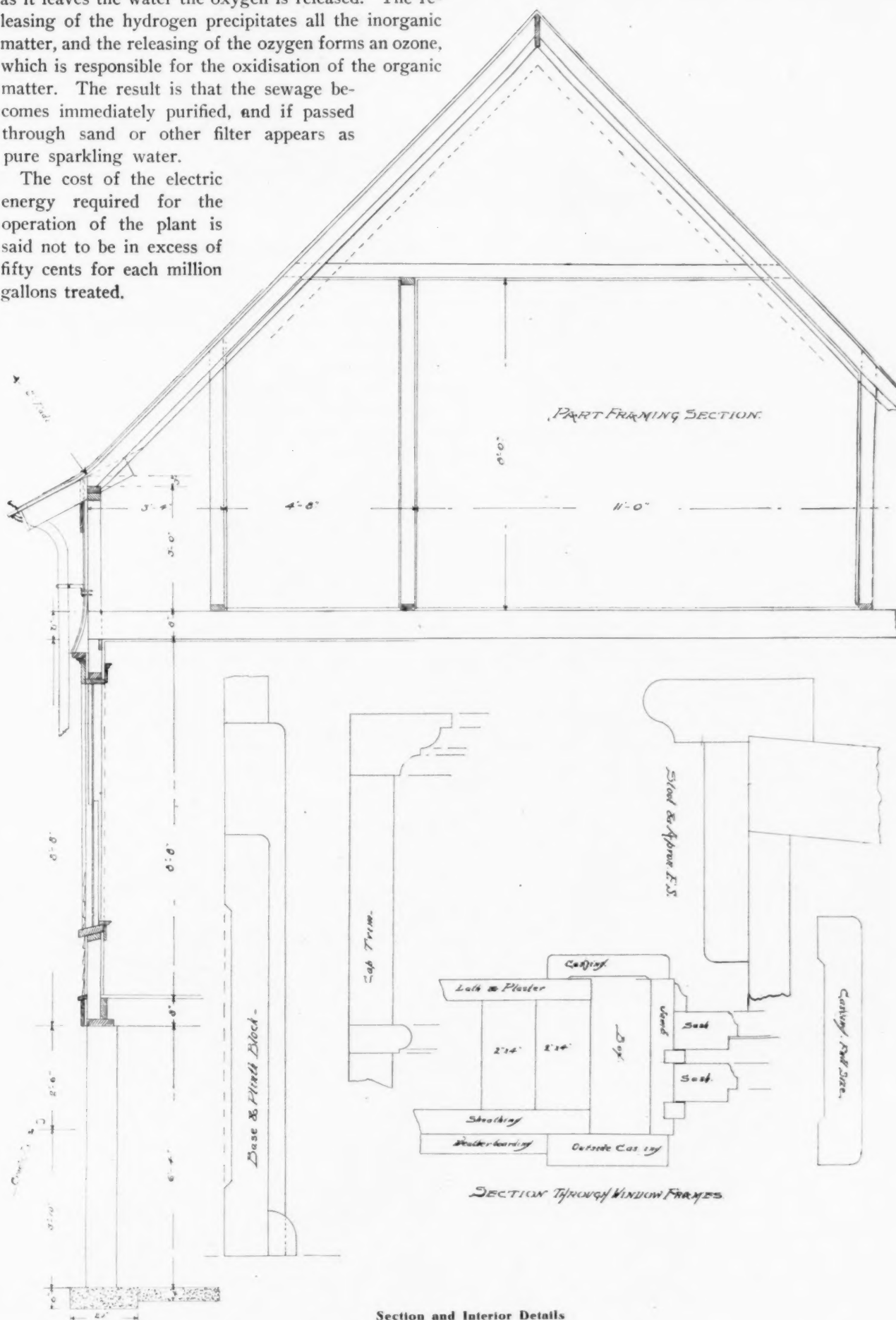
is equipped with two compartments sealed tight, into which the sewage is pumped from the receiving-basin. Their combined capacity is one million gallons per day. After leaving these sealed chambers the sewage flows into the tanks in sufficient volume to cover the

time it is supposed to be odorless and perfectly harmless.

Experience has demonstrated that as the electric energy required for the operation of the plant is held, the effect is to immediately release the hydrogen, and

as it leaves the water the oxygen is released. The releasing of the hydrogen precipitates all the inorganic matter, and the releasing of the oxygen forms an ozone, which is responsible for the oxidation of the organic matter. The result is that the sewage becomes immediately purified, and if passed through sand or other filter appears as pure sparkling water.

The cost of the electric energy required for the operation of the plant is said not to be in excess of fifty cents for each million gallons treated.



PRACTICAL CARPENTRY

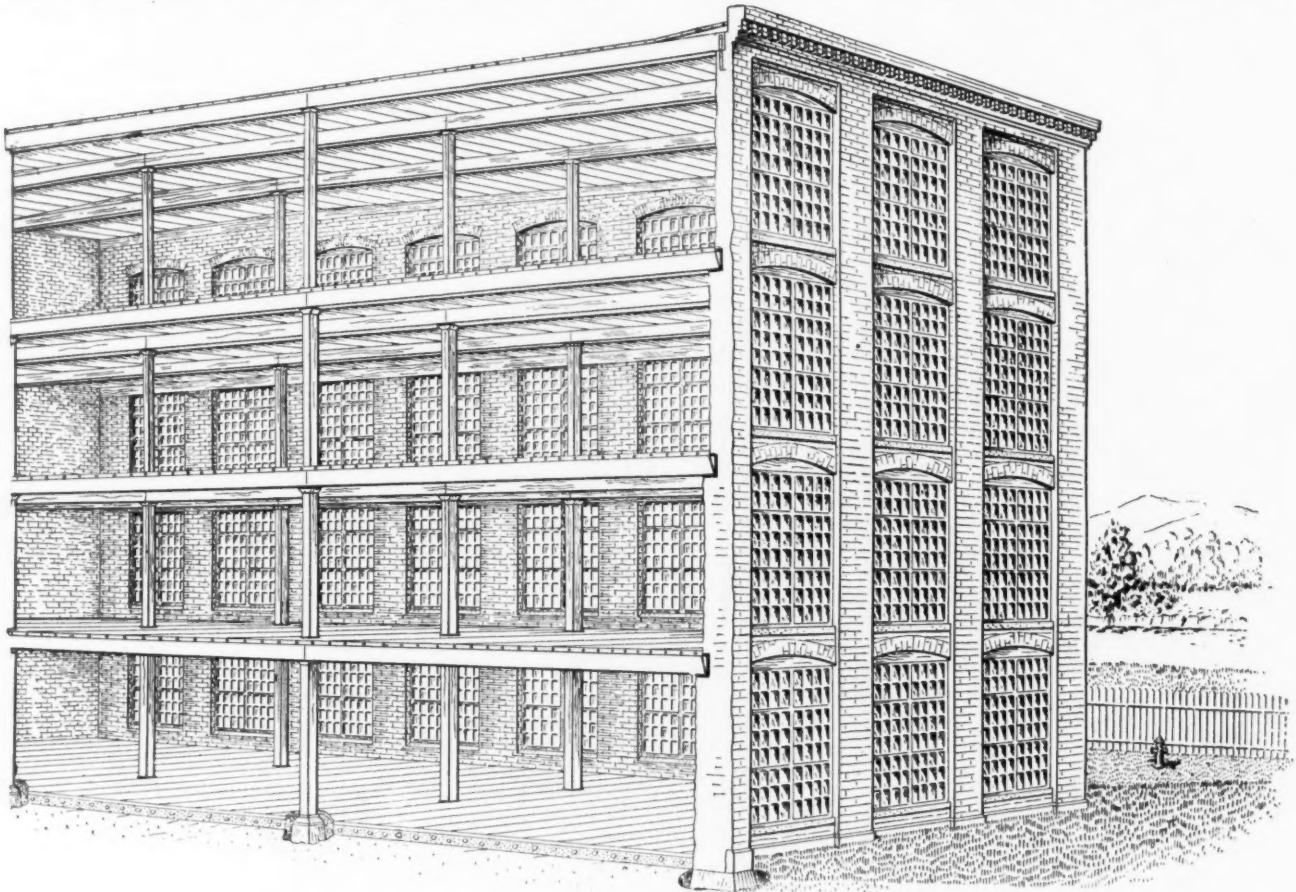
Standard Mill Construction

THE SECOND OF A SERIES OF ARTICLES ON MILL OR SLOW-BURNING CONSTRUCTION—VALUABLE DATA FOR OWNERS AND BUILDERS

THE succession of heavy fire losses each year is the penalty which this country is paying for the erection of light, cheap, and poorly designed buildings. The cost of fire insurance is a direct yearly tax on the building and its occupants. It is the duty of those responsible for the design of buildings to plan them so that this tax may be the smallest

pense of the thoroughly fire proof reinforced concrete structure is warranted; otherwise mill construction should be used.

In order that there shall be no misunderstanding of what is meant by "mill construction," we will say that it consists of disposing the timber and plank in heavy solid masses so as to expose the least number of cor-



possible, and this can be done often without any great increase in the cost of the building itself. According to tests made by the Boston Insurance Engineering Experiment Station—which only confirm and bear out the experience of years—it has been clearly shown that, all things considered, the mill or slow burning type of construction is to be recommended for most factory and warehouse buildings. In some cases, where the contents is to be extra inflammable, the extra ex-

ners or ignitable projections to fire. Also it consists of separating every floor from every other floor by fire stops.

The essential features of standard mill construction are illustrated and are, briefly, as follows:

1. The walls should be of brick or concrete block at least 1 foot thick (16 inches for best work) in top story, and increased in thickness at lower floors to support additional load. The pilastered wall has many

favorable features and is often preferred to the plain wall. Window and door arches should be of brick, window and outside door-sills and underpinning of granite or concrete.

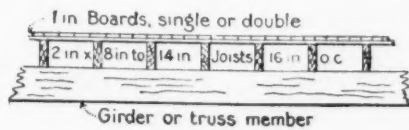


Fig. 1. Undesirable Construction

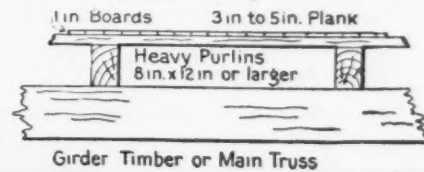
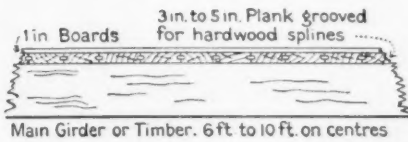
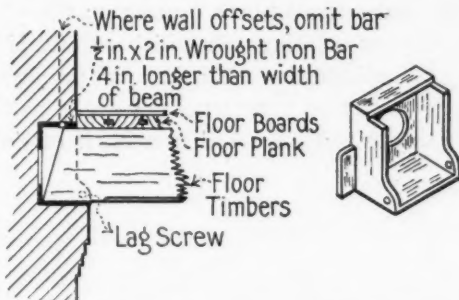


Fig. 2. Good Types of Construction

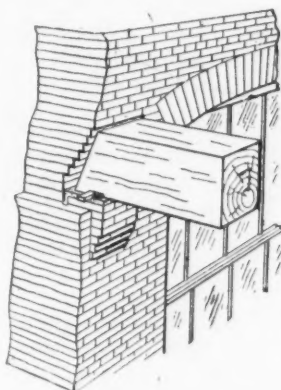
2. The roofs should be of 3-inch pine plank, spiked directly to the heavy roof timbers and covered with



Cast-iron Wall Box for Floor Timbers, with Lugs for Anchoring to Walls

5-ply tar and gravel roofing. Roofs should pitch $\frac{1}{2}$ inch to $\frac{3}{4}$ -inch per foot. An incombustible cornice is recommended when there is exposure from neighboring buildings.

3. Floors are best made of spruce plank 4 inches or more in thickness according to the floor loads, spiked directly to the floor timbers and kept at least $\frac{1}{2}$ inch clear of the face of the brick walls. Figs. 1 and 2 show bad and good forms of floor construction. In floors and roof, the bays should be 8 to 10 $\frac{1}{2}$ feet wide and all plank two bays in length, laid to break joints every 4 feet and grooved for hard wood splines. Usually a top floor of birch or maple is laid at right angles to the planking, but the best mills have a double top floor,



Floor Timber Resting on Cast-iron Wall-plates, With Lugs for Anchoring Timber to the Wall.

the lower one of soft wood laid diagonally upon the plank and the upper one laid lengthwise. This latter method allows boards in alleys to be easily replaced when worn, and the diagonal boards brace the floors, reduce vibration, and distribute the floor load even better than the former method.

Between the planking and the top floor should be two or three layers of heavy tarred paper, laid to break joints, and each mopped with hot tar or similar material to produce a reasonably water-tight as well as dust-tight floor.

Rapid decay of basement or lower floors of mills

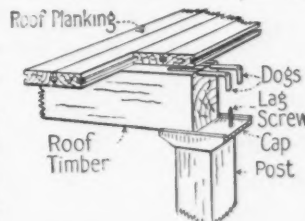
makes it desirable, whenever wood is not absolutely necessary, to provide cement floors for these places. If wooden floors are required, crushed stone, cinders, or furnace slag should be spread evenly over the sur-

face and covered with a thick layer of hot tar concrete, on which is often laid tarred felt, well mopped with hot tar or asphalt, on which a floor of 2-in. seasoned plank should be pressed, nailed on edge without perforating the waterproofing under it, and the hard wood top floor boards nailed across the plank. Cement concretes promote decay of wood in contact with them. If extra support is required for heavy machinery, independent foundations of masonry should be provided.

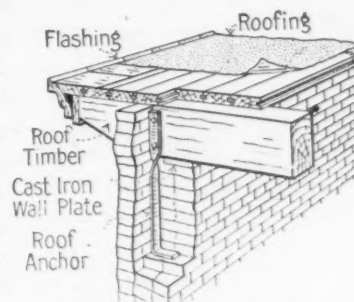
4. In regard to timbers and columns it should be remembered that all woodwork in standard construction, in order to be slow-burning, must be in large masses that present the least surface possible to a fire. No sticks less than 6 inches in width should be used, even for the lightest roofs, and for substantial roofs and floors much wider ones are needed. Timbers should be of sound Georgia pine, and for sizes up to 14 by 16 inches. Single sticks are preferred, but timbers 7 or 8 inches by 16 are often used in pairs, bolted together without air space between. They should not be painted, varnished, or filled for three years because of danger of dry rot, and an air space should be left in the masonry around the ends for the same reason. Timbers should rest on cast-iron plates or beam boxes, in the walls and on cast-iron caps on the columns.

Beam boxes are of value as they strengthen the walls when floor loads are heavy and distance between windows small; they facilitate the laying of the brick and the handling of the beams, and there is less possibility of breaking away the brick in putting the beams in place. They also insure a proper air space around beams.

Columns should be set on pintles, which may be cast in one piece with the cap, or separately, as pre-



Roof Timber Resting on Column-cap. Timbers Held Together by 1-in. Wrought-iron Dogs.



Roof Timber Resting on Cast-iron Wall-plate, Showing Overhanging Open Wood Cornice and Wrought-iron Anchor.

ferred. Columns of cast-iron are preferred by some engineers, and when the building is equipped with automatic sprinklers, have proved satisfactory, but are not as fire-resisting as timber. Wrought-iron or steel columns should not be used unless encased with at least 2 inches of fireproofing.

One of the most important features of slow-burning construction is to make each and every floor continuous from wall to wall, avoiding holes for belts, stairways, or elevators to the utmost extent possible, so that a fire may be confined to the floor where it starts. No well-informed mill owner, engineer, or builder will therefore fail to locate elevators, stairs, as well as main belts, in brick towers or in sections of a building cut off by incombustible walls from all the rooms of a factory. Openings in these walls should be provided with fire-doors, preferably self-closing. These should be hung on heavy, inclined, solid steel rails at least $3\frac{1}{2}$ inches by $\frac{3}{8}$ inch, and balanced by a weight held by a fusible link.

In modern practice all belts and ropes which may be used for transmission of power to the various rooms are placed in incombustible vertical belt chambers, from which the power is transmitted by shafts through the walls into the several rooms of the factory. There should be no unprotected or unguarded openings in the inner walls of this belt chamber.



An Open Letter From a Building Contractor to a Budding Architect

MY DEAR SIR:—

The other day an architect said to me, with sorrow and indignation blended in his tones, "You do ask such awkward questions." This was because I had placed before him a list of queries concerning a job upon which I was then engaged. I can quite imagine that a contractor may be very undesirable company at times, owing to his propensity for asking questions. He is, in fact, a large interrogation mark. But what is he to do? Drawings and specifications sometimes contain such very peculiar items. Drawings from which I figured recently were accompanied by an outline specification, which was compiled so that, the architect fondly hoped and stated, "the building contractor would not need to ask a lot of questions." Unhappily, and much to the architect's astonishment, the query list became of quite imposing length. The fact is that draughtsmen, unless very experienced, are not accurate enough in their work to satisfy the demands of a normally curious and careful estimator.

You should carefully train yourself in consistency; it is as good a quality in an architect as in mortar. It is frequently the case that your work will not hang together. For example, a section will purport to be taken on line "A B," and the plan will show no trace of either the line or the letters; or the chimney will be shown to have three flues on the roof plan, and four on the third floor plan. It may seem a bold statement,

but instances of this sort of carelessness appear on a very large proportion of the sets of plans you send out. And when you have finished counting up your chimney flues, you might see that you have shown clearly whether they have to be parquered with mortar or whether you intend to use flue pipes. Be sure that the drawings know their own minds about chimney-pots. Let them be authoritative on the point of air flues.

If the strain is not too great upon you, it will be very encouraging to the estimating contractor if the drawings and specifications agree in descriptions. If floor joists are specified to be placed at 16-inch centers, please do not write 15-inch centres on the plan, however neat your printing. It will be useful if you can manage to indicate the walls that you propose to have built in cement; do not plan brick walls as 6-inch or 12-inch thick; you have rather a habit of doing this, and it is a source of great perplexity. The best thing to do is to figure the thicknesses of all the walls. With the thick lines now in vogue for small scale drawings plans should invariably be figured. A line 3-inches thick by scale is a bugbear.

Be especially careful with the drainage plan. To the best of my memory, I have never yet seen a complete drainage plan. A rain-water drain or a sink waste has almost invariably been omitted. In specifying the size of manholes try to make them a multiple of half a brick to obviate wasteful cutting to obtain a fancy size.

Do not scruple to provide details; they will not weary the estimator, and moreover, they will have to be made at some time. At all events, have your mind made up as to what you want. If you don't do so the contractor will probably dream something on his own account; he is quite a "Joseph" at dreaming.

And you may as well indicate the gas points first as last.

Use a reasonable degree of intelligence—I know you have it—in describing materials for the work. When you have stated that the glazed bricks are to be of *second* quality, please do not proceed to say—as you inserted in a specification only the other day—that "they are to be perfectly free from all defects whatsoever." That kind of brick is first quality brick.

I have not attempted to compile a complete catalogue of your peccadilloes, but have indicated a few directions in which you may exercise your undoubted abilities with advantage.

Finally, please do not imagine because an estimating contractor points out your little deficiencies that he does it to spite you. As a matter of fact, he really loves you, if you only knew it, and he does it for your good.

Yours benignantly,
A BUILDER WHO FIGURES.



Many a man who feels big acts small.



THE HOME WORKSHOP

Ira S. Griffith

Handicraft Furniture—Why and How

VALUABLE SUGGESTIONS TO ALL CRAFTSMEN FOR ENJOYABLE SPARE-TIME EMPLOYMENT—HAND-MADE FURNITURE PICTURED AND DESCRIBED

SIMPLICITY and good workmanship formed the keynote of the old handicrafts. Whatsoever is made in the Home Workshop should possess these characteristics. The ornate and elaborate should find no place. The work of the scroll saw should be wanting, and the purely ornamental should be left severely alone. Whatever of beauty is found in the products of the Home Workshop should be an integral part of the thing made. By this we do not mean to say that a lack of beauty is to be desired. Far from

these is added individual interest, the result must be pleasing and the process of making it likewise a source of great pleasure.

Speaking of the pleasure of doing, one who has never experienced the fascination which comes in the making of that which has a real and vital interest has missed a valuable part of his life. The writer, when a boy, had occasion to reflect upon the utter abandon to which one may give himself to it to the exclusion of everything else. His father was given to the making of home furniture after work hours. As this was before the time of the electric light, the writer was required to hold the oil lamp so that the craftsman might the better see his work. Many were the nights when the hands of the clock would move around to eight, nine and ten before the worker would realize the hour. To the one holding the lamp the minutes were hours.

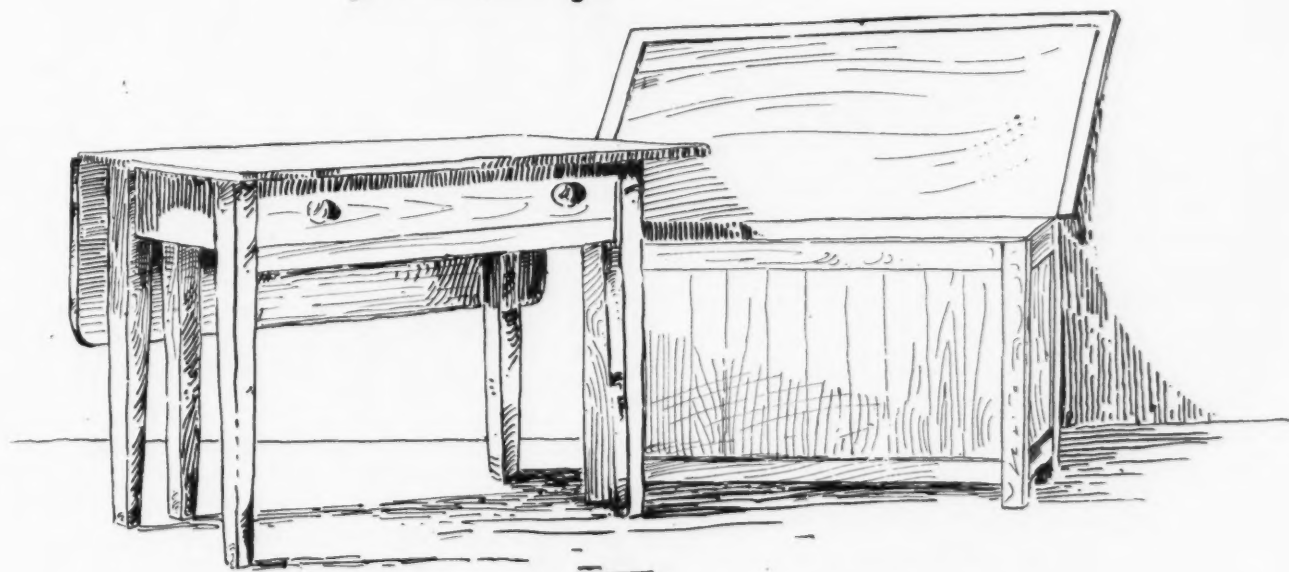
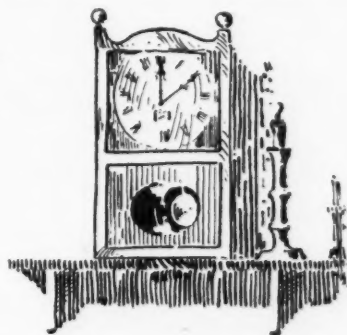


Fig. 1. Desirable for the Kitchen—Table and Wood Box—Easily Made

it, for every effort should be made to build pieces that shall prove a source of mental pleasure to all who shall look upon them. Nor should we depend upon mere chance to bring about pleasing results. Artistic and practical training should be combined and, if to

The value of a vital interest cannot be overestimated. People are beginning to realize it as never before. Our schools are being entirely reorganized because school men are coming to see that interest is the indispensable basis of every method of education. No

longer are the children driven to tasks that are distasteful, forced to perform them because it is thought that, like vile tasting medicine, the viler and more disagreeable the more good there is to be derived.



Fig. 2. Cottage Chair of Craftsman Design

Rather, the pedagogue strives to make the task so interesting that the child gains mental strength and knowledge without being conscious of it.

This great practical problem is not the problem of the school room alone. It is the problem of the workers of the world. How often we see it exemplified in the carpentry craft—a foreman or contractor full to overflowing with interest and enthusiasm. The days are never long enough for him. While about him are men who act as weights to drag him down—"clock-watchers," to whom the minutes are as hours. What makes this difference? A vital interest on the part of one and a lack of it on the part of the others. If the Home Workshop can suggest something that shall serve to maintain or create that attitude of mind peculiar to the one who has a vital interest and a love for the thing he is doing, one of its chiefest aims will have been accomplished.

Of course there are tasks to be performed that are not pleasant. We do not mean to imply that because

we should strive to be vitally interested in all that we do, therefore, we should never do anything in which we are not vitally interested. Just as the child must be taught to do some things because they are for the best, so the craftsman must not expect to "lie down" should discouraging moments cause his interest to lessen. Interest, unless it becomes an all absorbing passion, will need coaxing with often a little forcing to make it assume its proper place.

Referring to the accompanying drawings, in Fig. 1, is shown some kitchen furniture of plain design, a table and a woodbox. The skilled craftsman will know from looking at the sketches the technical construction. The amateur will find it necessary to do some investigating of pieces of furniture to which he may have access.

This table may be made of soft or hard wood. It will be found advisable in either case to use a close grained soft wood, such as white pine, for the top. Pine is less likely to warp and is more readily cleaned than most other woods. This top should be of good clear lumber free of any "shakes" or other imperfections and should be especially well seasoned. The leaf at the back of the table is to be hinged to the

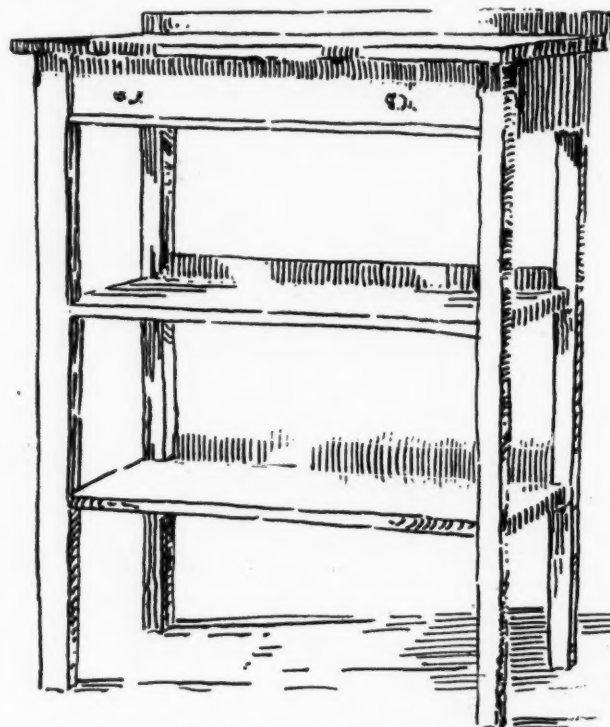


Fig. 3. Cottage Serving Table—Simple and Neat

top proper. When raised it is supported by means of a fifth leg which swings around from under the table. The size of the table, the length and width and the height of the top from the floor, should be determined by local conditions. A small space will demand a small table and vice versa, while different women have different likes as to the height of the top.

The top and rails may be appropriately made of seven-eighth inch stock while two inch will be about right for the legs. The legs are to be slightly tapered;

the drawer sides, back and bottom may be made of three-eighth inch white wood or pine; and the whole should be plowed and fitted together in a thorough and workmanlike manner. The knobs for the drawer are suitably turned out of wood though metal ones might be used if more easily procured.

Housewives like light finishes in the kitchen so the table frame would better be finished light. The top,

oughly constructed by tenoning the rails into the posts. These rails should be at least one and one-eighth inches thick and should be rabbeted to receive the paneling. The paneling should be tongued and grooved to prevent the dust from sifting through. The bottom, likewise, should be made dust proof and be solidly fitted. The lid shown in the sketch is cleated around the outer edge so as to fit over the outside of the box. The joint between the top and cleat is covered by a thin piece of stock fastened to the two parts by means of round head screws. The paneling for the sides should have the joints relieved by beading. Another way would be to groove both edges of each piece, beveling the outer edges almost to the grooves, a spline being used to joint the parts together.

In Fig. 2 is shown a cottage chair. The size of the legs and the other proportions are to be determined by the craftsman himself. If a chair of light weight is wanted, legs one and one-eighth inch square will not be too light. The height of the chair from the floor, the height of the back, the width and depth of the seat, the width between the front and between the back

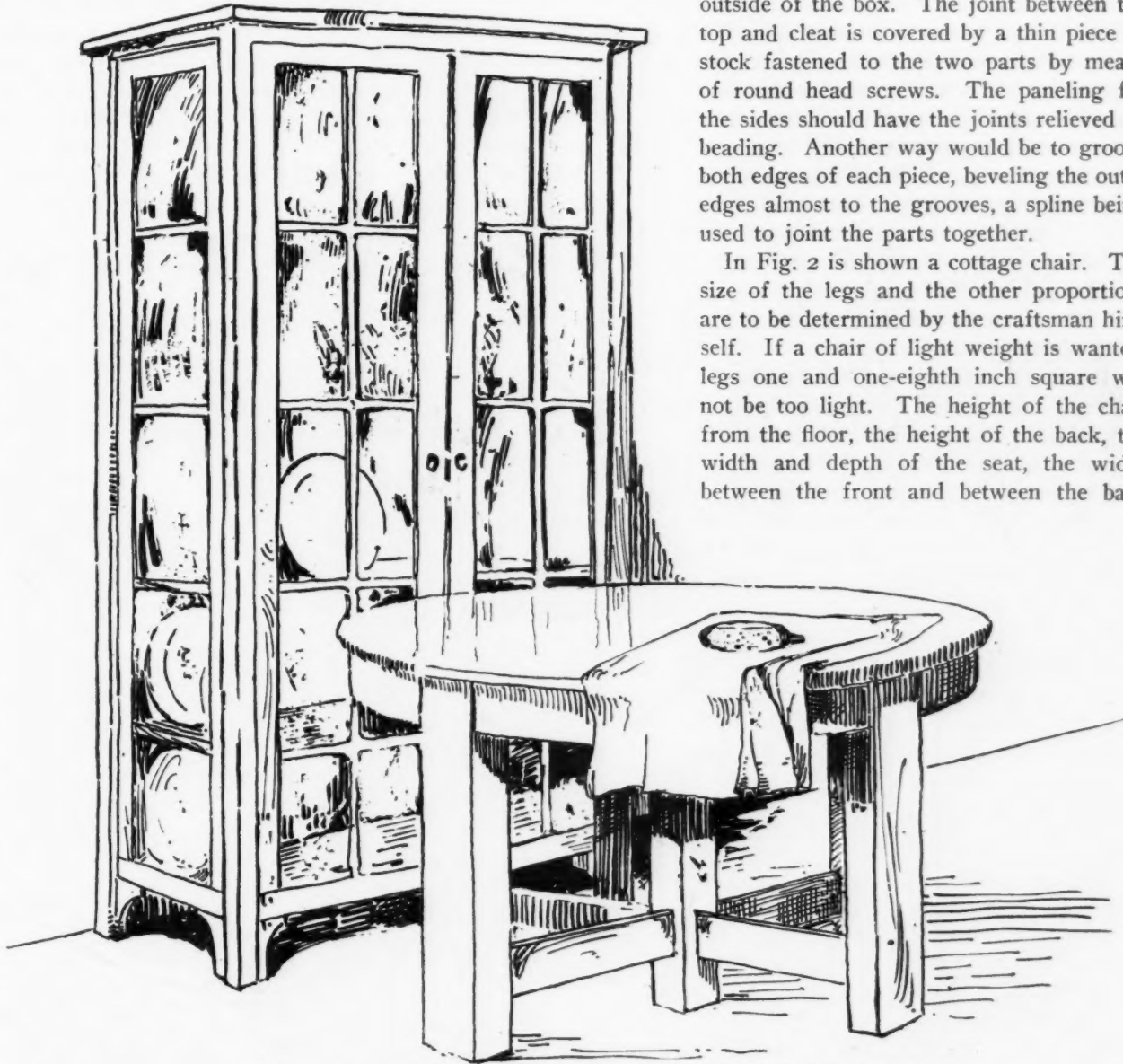


FIG. 4. Dining Room Pieces Worthy the Skill of the Best Handicraftsman

however, ought to have no finish except a thorough sanding. The housewife will tell you the reason if you cannot surmise.

Another piece for the kitchen is the woodbox, Fig. 1. A woodbox, usually, is constructed out of a dry-goods or soap box. We could have described a way to make one of these that would have answered the purpose and have been much cheaper than the one shown in the sketch. The struggle against dirt and unloveliness is hard enough for the kitchen dweller, however, without the addition of such a burden.

The woodbox shown in the sketch is to be thor-

oughly constructed by tenoning the rails into the posts. These rails should be at least one and one-eighth inches thick and should be rabbeted to receive the paneling. The paneling should be tongued and grooved to prevent the dust from sifting through. The bottom, likewise, should be made dust proof and be solidly fitted. The lid shown in the sketch is cleated around the outer edge so as to fit over the outside of the box. The joint between the top and cleat is covered by a thin piece of stock fastened to the two parts by means of round head screws. The paneling for the sides should have the joints relieved by beading. Another way would be to groove both edges of each piece, beveling the outer edges almost to the grooves, a spline being used to joint the parts together.

In Fig. 3, is a cottage serving table. Nothing could be more appropriate for the dining room of a cottage than this simple piece of furniture. It should

be made of oak and finished to correspond with the other furnishings of the room. The top and shelves may be of seven-eighths of three-quarters inch stock, the top being eighteen inches wide by thirty inches long. The legs should be thirty-eight inches long with a width and thickness of one and three-quarters or two inches. The legs should be tapered towards the bottom and the shelves should be "let into" them and should be doweled and thoroughly glued.

The china cabinet and extension table, Fig. 4, are of the same simple design as the serving table. It will be observed that the ends of the china cabinet are made up of panels. These like the doors are

glazed with double strength glass. Good proportions for this piece would be 38 by 68 by 15 inches.

The dining table is of Dutch design and can readily be made into an extension table. Quartered white oak should be used. The top should be made thicker than the ordinary table top so as to match the legs.

A suitable finish for the oak pieces is obtained as follows: Place the furniture in an air tight chamber in which are vessels of ammonia. In twelve hours the fumes of the ammonia will have penetrated the wood causing a chemical change of color. Linseed oil should then be rubbed well into the wood, after which several coats of wax should be applied.

Small Brick Veneered Church

PERSPECTIVE AND FLOOR PLAN OF AN ATTRACTIVE, INEXPENSIVE CHURCH—GOOD FEATURES OF CONSTRUCTION AND ARRANGEMENT POINTED OUT

THE church with floor plan shown in connection with this article is that of a building recently erected at Arapahoe, Nebraska, after plans and

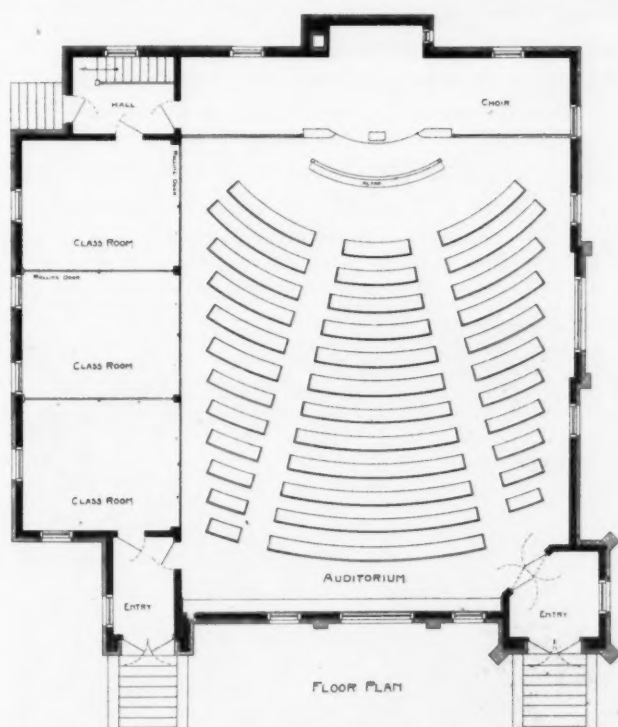
specifications prepared by Woods & Cordner, of Lincoln, Nebraska.

This is a frame building, framed in the usual way



for lath and plaster within, but instead of weatherboarding it is encased with brick on the outside and to all appearances is of solid brick. Buildings erected in this way have a decided advantage over solid brick walls from a sanitary standpoint, because frost and dampness cannot penetrate the walls so easily, which is a serious matter in some sections of the country. Costly wall decorations are often ruined because of a lack of foresight in providing against dampness at the time of building, by the use of hollow spaces, furring or water-proofing for the walls. Brick veneering provides against this fault; besides it is more cheaply constructed than the solid brick walls.

The plans here shown make a very suitable building for a small sized congregation. The auditorium will seat about 200 people in the pews and by using chairs



in the class rooms, which can be used in connection with the main room, 100 more can be accommodated. The arrangement is simple. It has two main entrances and a rear entrance with stairway to basement, which is finished only for furnace and fuel rooms. The basement walls are of cement blocks up to the water table. The veneering is of pressed brick with Bedford lime stone trimmings. The towers above the cornice line are shingled. The larger tower contains an open belfry, as shown. Large art glass windows flanked with smaller ones are shown on the two main fronts and lend much toward making an attractive building.

Facts Concerning Asbestos

The sporadic use of asbestos can be traced back to ancient times, but it was not until about forty years ago that investigations were begun in Europe to develop its application on a commercial scale. About the same time specimens of fine Canadian asbestos were

exhibited abroad. In 1878 fifty tons were shipped from Canada to England, and after that date the advances in the application of asbestos in commerce became rapid.

Asbestos was at first used only for spinning and weaving to make incombustible thread, yarn, rope and cloth; and this use has continued to be its most important application ever since the days of the Greeks and Romans. Of late, however, it has been widely used in the electrical arts as a basis of insulation which must withstand the rather high temperatures, and also as a fibrous binder for a great number of insulating compounds. It is also used largely in glass factories. It is practically the only fiber of a refractory nature that is at the same time an electrical insulator of high order. Further, asbestos is not affected by many of the active chemical agents likely to attack most insulators. It is also extensively used for boiler and pipe coverings, to prevent heat radiation, as well as for theater curtains and other fireproof cloths or fabrics. Mixed with other substances it forms various incombustibles and insulating pastes and molable or solid materials suited to many different purposes. Such compounds are asbestos building lumber, century shingles, asbestos wood, asbestos slate, asbestos for stucco and plaster and asbestolith.

A mass of asbestos broken into fibers and then compressed is highly porous; yet it may be rendered not only waterproof, but an especially effective insulator under conditions of varying moisture by being saturated with certain varieties of asphalt.

As a nonconductor of heat it is used not only in the preparation of fireproof safes and vaults but also for cold storage and cooling structures. Houses made of asbestos materials or coated with asbestos throughout are not only warmer in winter, but cooler in summer.

Although the United States is the largest manufacturer and consumer of asbestos products in the world, the asbestos used in its factories comes almost wholly from Canada. The quantity mined in the United States is insignificant, the total output for 1907 being only 653 short tons—the smallest annual production since 1896. The cause of the decline is found in the better quality and the greater abundance and accessibility of the Canadian asbestos, which completely dominates the industry in the United States.

+

A Puzzle

"Hello," cried young Mr. Newliwed, entering the kitchen, "making some bread, eh? Or is it cake?"

"I don't know," replied the dear little bride, with a despairing frown, "I haven't finished yet."

+

Maxim of an Optimist

Don't worry, don't kick; it makes people sick,
And your chances are all the time less;
Just laugh and grow fat, wherever you're at,
And it will certainly bring you success.



CEMENT BUILDING CONSTRUCTION

Monolithic House Without Forms

LATEST MARVEL OF CONCRETE CONSTRUCTION—PRACTICAL SYSTEM DEvised BY ARMY OFFICER FOR MOLDING WALLS COMPLETE IN HORIZONTAL POSITION, THEN RAISING THEM

AN ENTIRELY unique and novel form of construction, which appears to have a great deal of merit, has recently been devised by Col. R. H. Aiken, of Winthrop Harbor, Ill.

Colonel Aiken, who for a number of years has been interested in concrete construction, conceived the idea of building walls of moderate height in practically a horizontal position, and raising same into an upright position after the concrete had hardened, thus saving

single operation without developing stresses, which cause the wall to crack.

The method is simple and in brief, is as follows: A platform of planks is placed on a steel framework, supported by specially constructed jack-screws. The workmen place the wooden window and door frames on the platform in the positions specified in the architectural design. The window ledges, cornices, etc., have been molded in readiness and are of such a de-

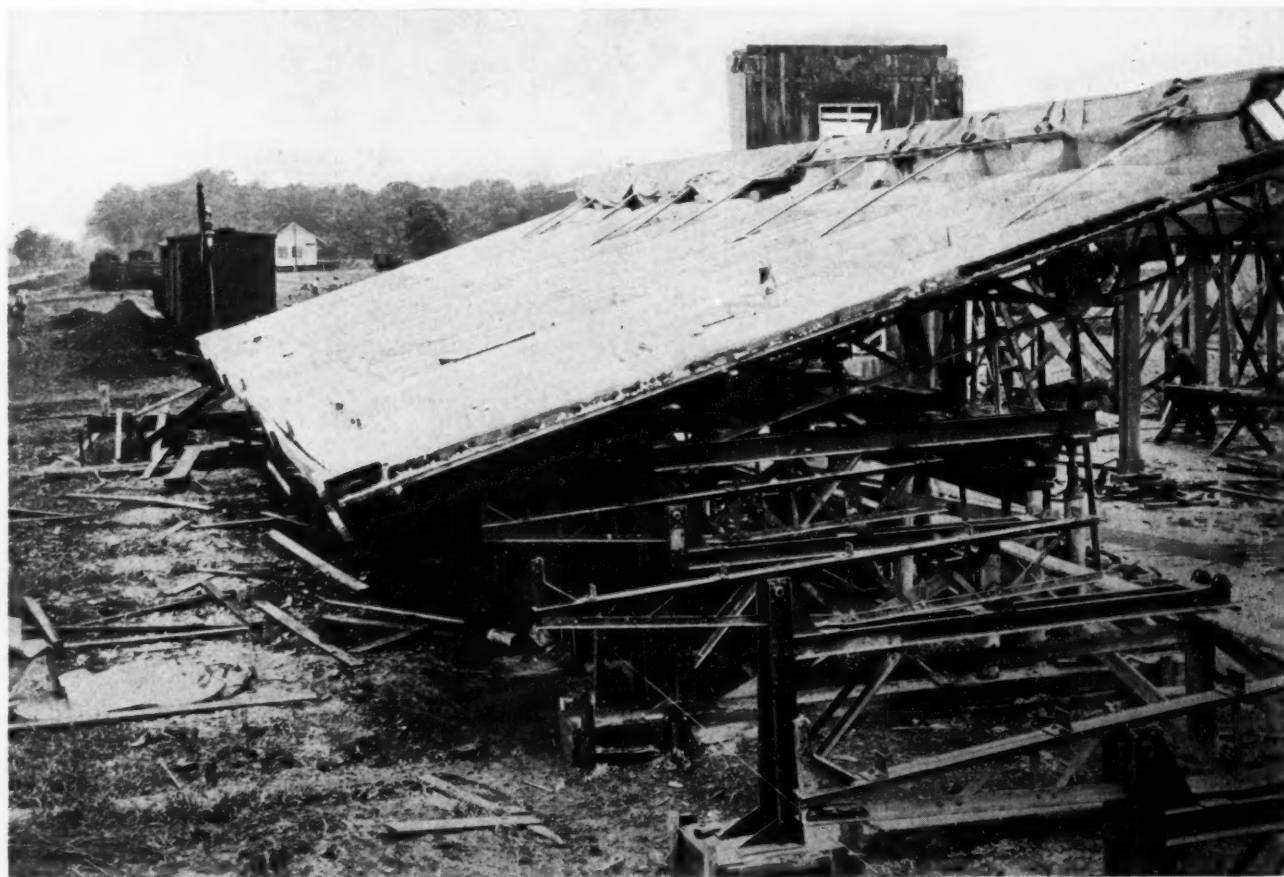


Fig. 1. Finished Wall Section in Reclining Position, Showing Construction of Jacks

a great deal in forms, and simplifying the work.

After experimenting with different schemes for raising the walls, Colonel Aiken has developed an apparatus which he calls a jack, making it possible to erect a wall of any length and up to 40 feet in height at a

sign as desired; they, too, are placed in position on the platform. Then comes the wheelbarrow brigade and the wet concrete is dumped into the spaces between windows and doors, $\frac{1}{4}$ inch twisted steel rods are imbedded and form the walls. When the concrete

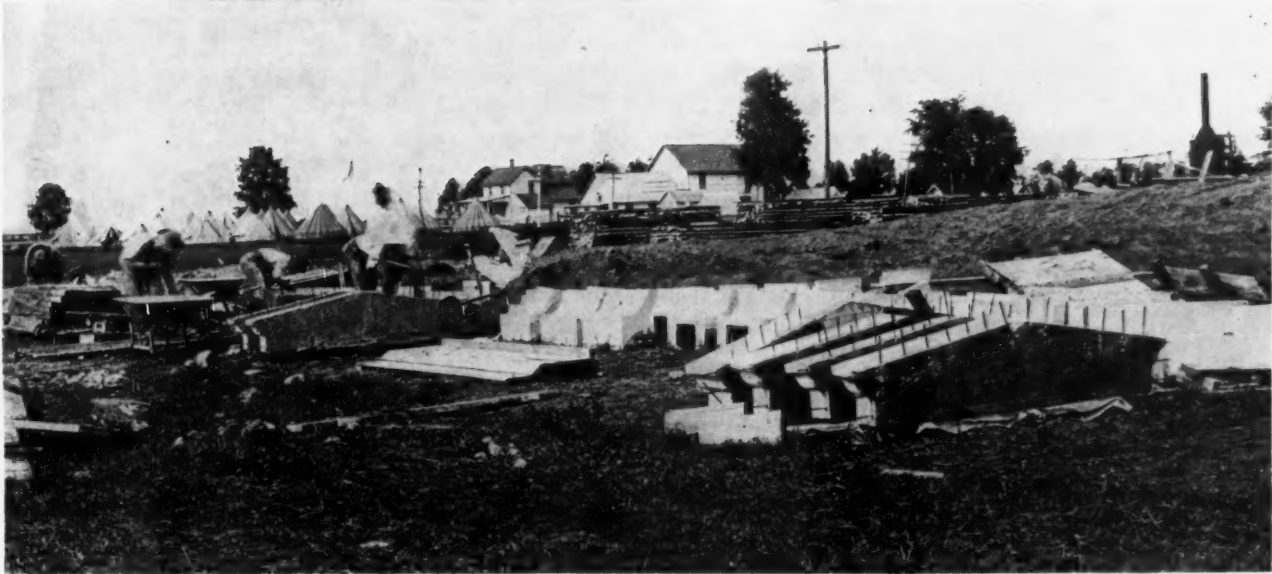


Fig. 2. Door and Window Caps, Decorations, Etc., Molded Separately—Notice the Reinforcing Metal

sets it is raised into an upright position with the powerful jacks, and the planking is stripped from the back, leaving the wall standing—a solid wall of concrete—and work is resumed on the next side. When all are in position concrete is flowed in where the walls join and the whole becomes a solid mass.

The illustrations shown herewith are pictures taken of a building under construction at Camp Perry, Ohio. The building is a mess hall, 170 by 76 feet, and is being constructed for the State. This building was planned in

wood, but is being constructed by the Aiken scheme at a cost slightly in excess of what the building would have cost in wood, and it is needless to say that it will be in every way superior to a frame structure. It is absolutely fireproof, and the cost of maintenance is, by the use of concrete, reduced to a minimum. The thickness of the walls of this building is 4 inches, reinforced with $\frac{1}{4}$ inch twisted rods, concrete being a mixture of 1 part Universal Portland cement, 2 parts washed lake sand and 4 parts crushed stone.



Fig. 3. The Finished Walls Raised and Corners Locked—A Strong and Beautiful Structure

Figure 1 shows a section of the wall on the jacks ready to be raised into position. The walls of this building are 25 feet high and this section is 70 feet long. As will be seen in the illustration, the frame, on which the concrete is placed, is erected on the jacks supported by small channel irons. The window frames, window and door caps, cornice, cornice brackets and all other decorations are placed in proper position on the form, these being molded in the field, as shown in Fig. 2, the reinforcing metal in these decorations being allowed to project, which gives

counterbalancing the same weight on the opposite side, thus reducing the actual load on the elevating screws very materially.

This mess hall is finished with a coat of white sand and white cement, which is applied while the wall is reclining on the jacks. This form of construction makes it possible to work out with ease and in an exceptionally satisfactory manner any little detail one might desire, which with other forms of concrete construction would be difficult.

At Camp Logan, the Illinois rifle range near Wau-

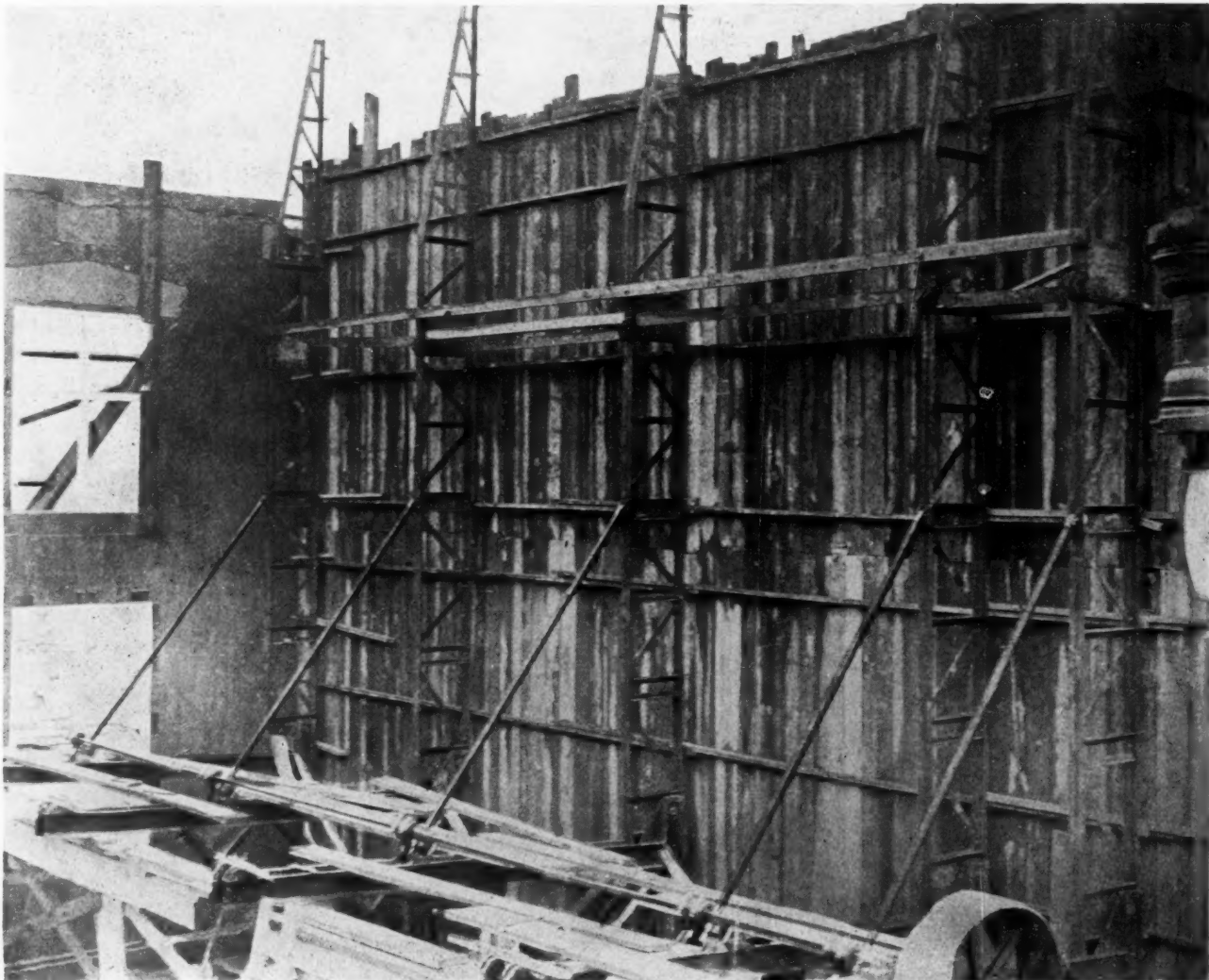


Fig. 4. Back of Wall Shown in Fig. 3—Notice Supports and Raising Mechanism

a perfect bond into the body of the wall proper.

Figure 4 shows the inside or the back of a section of wall, just after it was raised into position. In Fig. 3, the face of the same wall is presented. This wall was raised into position and stripped of its form the third day after being molded.

It will be noted in Fig. 4 that the jacks are raised simultaneously by power, being connected by a tumbling rod. Colonel Aiken states that the amount of power required to raise a 70 foot section of wall will not exceed two horsepower. This is due to the fact that the jacks are supported at a point about 7 feet from the ground, the load forward of the pivot point

kegan, Colonel Aiken constructed last season a number of buildings by the new method, but they are much smaller in size than the Ohio building.

The quick method construction has been demonstrated at the Ohio camp. On July 6 the first wall was raised in position and ten days later seven sections were standing and the great structure began taking on shape. The sections are going up at the rate of one a day and there is no longer doubt in the minds of the officials but that the building will be in readiness, by the time the soldiers arrive.

This form of construction seems eminently satisfactory for residences and buildings of moderate height.



PAINTING

Edward Hurst Brown

Difficulties Often Met

BLISTERING AND ITS CAUSES—HOW TO PAINT A WEATHERBEATEN SURFACE—PROPER USES OF OILS AND DRYERS

ONE of the greatest causes for complaint, especially about painting that is done in summer, is blistering. Sometimes the trouble may be traced to inferior paint, at other times it is due to wrong application of the paint, but still oftener it may be traced to moisture back of the paint. Of course, the hot summer sun is apt to aggravate these causes, and it is a fact that blisters are not so likely to occur on the north side of a house as on the faces that are exposed to the direct rays of the sun.

An ochre priming coat, especially one that is composed of the cheap American ochres, sold as priming ochres, is very apt to cause blistering in subsequent coats, especially if the priming coat is not given several weeks to dry. This is because these cheap ochres, being largely clay, absorb and hold moisture, which turns into steam and raises the outer paint skin. Unfortunately, many painters seem to think that anything is good enough for priming, whereas this first coat is just as important as the foundation of a house, and unless it is made of the best materials and applied in a thoroughly workmanlike manner, the whole subsequent paint structure will be unreliable. If cheap and inferior materials are to be used on any portion of the work, it would be far preferable to use them on the last coat rather than on the priming.

Most Satisfactory Priming Coat

The best white lead mixed with raw linseed oil, and enough turpentine to insure the penetration of the paint particles into the pores of the wood and make the paint dry flat and hard, is the most satisfactory priming coat. Enough lamp black—not more than one or two per cent at most—should be added to make the priming coat a light lead color. This will cover up the stains and discolorations so common to modern lumber, and will make the subsequent coats of paint cover better. This is even more necessary if the house is to be painted white than if colors are to be used. For use under any strong, dark color, the priming coat may be tinted with the same color instead of with lamp

black. One of the most important things in connection with the priming, and in fact with any painting done in midsummer, is that it should be thoroughly brushed out and rubbed well into the wood. On no account should heavy coats of paint be used in summer time, as blistering will almost surely occur.

A round or oval "six naught" or "pound brush" is the best kind to use, because with this shape brush the paint particles can be forced into the wood, since the bristles are strong and elastic. With the flat brush, rubbing the paint out and into the grain of wood is difficult, and the temptation is great to the journeyman to simply spread the paint over the surface.

Boiled Oil

The mistake is sometimes made of using boiled linseed oil for exterior house painting, under the impression that boiled oil is better than raw oil. In the first place, a great deal of the oil which is sold as boiled oil, has never been boiled at all, but is simply raw oil overloaded with dryers. Such oil is known to the trade as "bung-hole boiled," and while it dries quickly it causes paint thinned with it to perish rapidly because it hastens unduly the oxidation of the oil. Sometimes this "bung hole boiled" oil has been heated for a short time in a steam jacketed kettle, but this does not make it real boiled oil. Genuine boiled oil is actually boiled, which drives off a portion of the moisture present in the oil, and lead or manganese dryers are added to the oil to hasten its drying. The result is a heavy bodied, partially oxidized oil. Paint mixed with it dries rapidly on the surface, but the under part of the paint film remains soft and tacky for a long time.

When the paint appears to be dry to the touch, the mistake is frequently made of putting on the final coat, which exerts a pulling influence on the soft undercoat, as the upper coat hardens, causing it to shrivel up or to wrinkle like an alligator's hide. If such a paint surface, at this time, is exposed to the direct rays of the sun, the heat causes the soft, undried paint, nearest the wood, to swell up, and the result is a blistered surface.

It can be confidently predicted, in nine cases out of ten, where boiled oil is used that this blistering will occur, for it is almost impossible to brush out a paint mixed with boiled oil sufficiently to avoid this undried layer of paint beneath the outer hardened skin.

A well-known paint expert has said that if only some way could be discovered to make paint dry from the inside toward the surface, that the ideal paint might then be produced. But when it is remembered that the drying of paint is caused by oxidation and that this chemical action is due to the absorption of oxygen from the air, it will be seen that this ideal method of drying is a practical impossibility.

Blistering

By far the greatest cause of blistering, especially when it is found only in occasional places or over a limited portion of an otherwise intact paint surface, is the presence of moisture back of the paint, and one of the first things for the painter to look for, when called to account for the presence of these blisters, is a leaky gutter, or perhaps some molding or window cap over which the rain may be driven by the wind to find its way into the spaces behind the boards. Often the leak will be some distance from the blisters, because the water will follow along a rafter or a stud until it meets with some dam or obstruction, when it will soak into the boards, finally being drawn out by the sun's heat to cause blisters in the paint.

Prick a bubble caused by moisture with the point of a knife blade and it will be found, usually, to be full of water. Sometimes these bubbles will disappear after a few weeks or months, the moisture either evaporating through the paint or being absorbed by the wood, and if the leak or other cause of moisture be removed, the paint will become solid and there will be no further trouble—especially if the paint pigments have been of an elastic nature, such as white lead or the various iron oxide or earth pigments.

A very fruitful cause of blistered paint is where the plastering has been done the painting, more especially if the window sash have been put in, or the windows covered with muslin and fires used to dry the plaster. The heat will frequently drive the moisture across the openings between the studs and through the outside boards, causing blisters in the paint, provided the paint film is heavy and more or less elastic, and more especially if the sun is warm. The writer's attention was recently called to a case of blistering caused by filling the spaces between the studding with salt hay, for the purpose of making the house warmer. The house had been painted with boiled oil before plastering. Naturally the water in the plaster thoroughly soaked the salt hay. The salt water penetrated the sheathing and clapboards, blistering the house badly and destroying the paint by the chemical action of the salt. The painter in this case could not possibly have prevented the blistering.

Where good materials are used; where there is suf-

ficient turpentine to harden the paint film, in the priming coat, and where the paint is well brushed out in thin coats, with ample time—not less than a week—allowed between the application of the coats of paint, there is practically no danger of blistering, unless it be due to some cause which the painter is powerless to prevent, such as moisture finding its way behind the paint from a leak or from the freshly plastered walls.

When a painted surface has blistered badly, it should be thoroughly scraped off and all blisters sandpapered so as to give smooth edges before repainting. It sometimes happens that this will not make a solid job and it is then necessary to burn off the old paint. While this is expensive, it is the most effective remedy for blistering, since the heat of the torch draws out any moisture left in the wood, and also will remove sap, to the presence of which blistering is sometimes due.

Painting a Weatherbeaten Surface

It does not always follow that boards which are wet or damp when painted will afterward blister. Indeed there are certain occasions when it may prove advantageous to wet down the boards before painting. This is when it is desired to paint an old weatherbeaten building, especially one that has never been painted before, and the woodwork of which has become almost like a sponge in its capacity for soaking up moisture. Such a surface will suck up the oil from the priming coat of paint, leaving the pigment as a dry powder on the wood, even though it is made much more oily than usual. It has been found by experienced painters that by wetting down such a surface with water, applied freely with a whitewash brush, just long enough before painting to allow the water to soak into the wood and swell it somewhat, an oily priming coat, with rather more dryer than usual, may be safely applied, and it will not only take less paint than if it were applied to the bare wood, but the paint will actually hold better. The water is quickly absorbed into the wood and has no chance to cause blisters.

In this case, the wetting down practically takes the place of a surfacer, filling the pores of the wood and preventing the paint from sinking too deeply into them. The added dryers serve to harden the oil before the moisture has been absorbed sufficiently to permit the oil to follow it, and thus the paint film remains intact on the surface instead of being denuded of its oil and left as a mere powder.

Air Slaked Lime

Another method that was formerly used by old-fashioned painters in New Jersey when they had to prime an old, weatherbeaten house, was to take lime that has been thoroughly air slaked and mix it with linseed oil to the consistency of a rather thin paint and use this for the priming coat. This is practically a lime putty, and the results obtained were said to be very

good indeed, while the cost is materially less than by the use of any ordinary paint. A good quality of whiting and linseed oil putty, thinned down in the same manner with linseed oil, is also said to make an excellent primer for weatherbeaten work.

Analogous to the above are several cheap paints that are highly recommended for rough work, such as fences, sheds, barns built of rough boards and the like.

A white fence paint of this character is made by slaking lime with but little water so it is almost like a paste in consistency. Mix two parts of this by measure with one part of white lead in oil, and run the mixture through a paint mill, afterward thinning with sufficient linseed oil to reduce it to the proper consistency for spreading well.

Another form of cheap paint for rough work also depends upon the use of lime, but in this case it is used for the purpose of introducing water into the paint in the form of an emulsion. To prepare this emulsified thinner slake one pound of caustic lime and add enough soft water to make two and a half gallons of lime water. Also dissolve one pound of sal soda in two and a half gallons of soft water. Mix the two solutions together and add one gallon of raw linseed oil, which must be thoroughly stirred into the mixture. After allowing it to stand for several days, this emulsion may be mixed with an equal quantity of raw linseed oil and used as a thinner for paint.

A formula for a colored paint that can be used for rough barns and outhouses is somewhat of the same nature. For yellow paint, ochre is to be used; for red, use Venetian red; or for reddish brown, use mineral brown—taking seventy-five pounds of either one, and to this adding an equal weight of bolted whiting and twenty pounds of air slaked lime. Mix these well and thin to the proper consistency for use as a paint with equal parts of raw linseed oil and skimmed sweet milk. This paint should be run through a paint strainer before using to remove any lumps.

Turpentine

One of his materials that the painter will find a frequent cause of trouble is turpentine. Owing to the growing scarcity of the long leafed pine, from the sap of which turpentine is made, and the manipulations of the market by a speculative combine of producers, the price of turpentine has been very high a good deal of the time within the past two or three years. This has naturally led unscrupulous dealers to sell adulterated turpentine for pure. When volatile petroleum spirits of about the same specific gravity can be bought for about one-fourth of the price of pure turpentine, there is, to say the least, a strong temptation to the dealer to draw out some ten gallons from each barrel of turpentine and fill it up with the mineral spirits, as it is called. Of course, this does not improve the quality of the paint, but the average painter never thinks of testing the material he buys; he takes it in blind faith, often making the price the

sole consideration. If he can buy what purports to be turpentine at two cents under the market price, he accepts it as such without question, and then if the paint goes wrong, blames the white lead or whatever pigment he may have used, although it was his own cupidity in buying cheap turpentine that caused the difficulty.

If turpentine at the present prices is too dear, it is far better to frankly use benzine and omit the turpentine altogether, as the two will not mix properly together, rather than to attempt to use a cheap, adulterated turpentine. There are a number of turpentine substitutes on the market, frankly offered as such—some of which may possess a great deal of merit, so far as we know. There is also a good deal of so-called wood-turpentine, which is made by the destructive distillation of pine wood, and which undoubtedly possesses good qualities or it would not be so extensively manufactured. It is said to be practically identical with the turpentine made from the distillation of the sap of the long leafed pine, except that the wood turpentine contains a small percentage of pyroligneous acid, which gives it a very disagreeable and pungent odor, quite different from the peculiar, aromatic odor by which the true turpentine is distinguished.

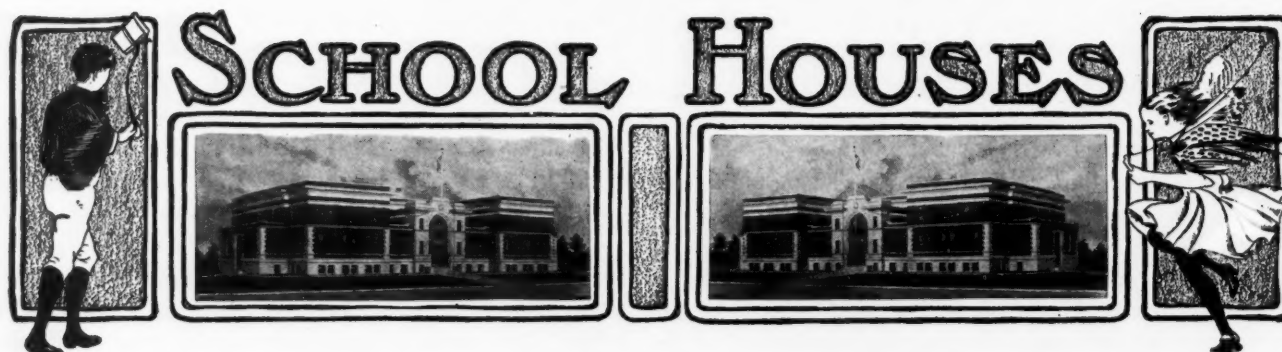
Tests for Purity

The following simple tests should be applied by the painter to every purchase of turpentine that he makes: It should have the peculiar, sweet, pine tree odor, not too pungent or sour, and without even the faintest smell of petroleum. It is well to keep a small bottle on hand that is known to be genuine turpentine for comparison. When drawn from a faucet or spigot, it should not froth, like coal oil, and if there is any foam, it should disappear quickly. A drop of turpentine placed on a piece of clean white paper, should completely evaporate, without leaving any mark, in five minutes. If it has not evaporated in eight minutes, it may be put down as fatty, and if a greasy stain remains after fifteen minutes it indicates adulteration with petroleum spirits of some kind or with kerosene oil. At any rate, it is unfit for use. Pure turpentine, when tested with a Beaume hydrometer, shows a range in specific gravity of from 0.863 to 0.867 at sixty degrees Fahrenheit. If a lower specific gravity than this is shown, it will indicate the presence of kerosene or benzine.

+

Milk for Painters

The *Journal de Medicine* states that the habitual use of milk neutralizes the effect of white lead. In some French lead mills it was observed that in a large working population two men who drank milk daily were not affected by the lead. On the general use of milk throughout the works colic vanished entirely. Each operative was given enough extra pay to buy a quart of milk a day, and for several years no cases of colic occurred.



A Four Room School

PLANS OF A SMALL, WELL-BUILT SCHOOL BUILDING SO PLANNED THAT IT CAN BE VERY EASILY DOUBLED IN SIZE AT ANY FUTURE TIME

WHEN building a small school it is always wise to have the plans drawn in such a way that future additions may be made to it in a practical and satisfactory way. Four rooms may furnish ample accommodations for the needs of a district this year; while five years from now eight might be required—so great are the changes in all parts of

signed by G. W. Ashby, architect, and erected at Grant Works, Ill., two years ago. As will be noticed on the floor plans, the rear wall is blank except for the windows extending the full width of the halls. This year a four room addition is to be built adjoining this wall, squaring up the building.

The construction is substantial and attractive. The



Four Room School Building of Satisfactory Design—To be Doubled in Size This Year

the country. If proper forethought is taken along this line, the original building, although small and inexpensive, may be very substantially constructed since it is to be permanent.

This principle is very well illustrated by the four room school building shown herewith. It was de-

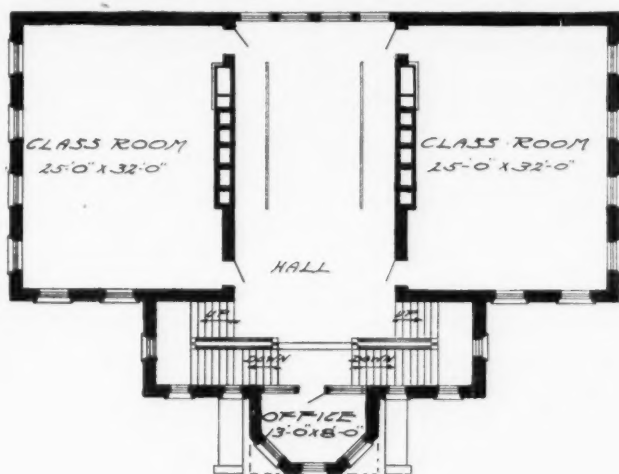
walls are of red brick with Bedford stone trimmings. There are two large, well lighted class rooms on each floor. The basement is finished, providing for toilet rooms, hot air heating plant and lunch rooms.

The first and second floor plans are given on the adjoining page and show the arrangement very well.

Model Tenement in Paris

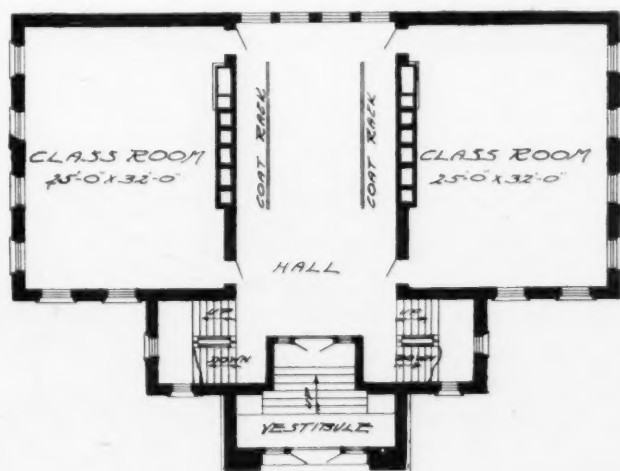
Another model tenement has been opened by the Societe Philanthropique, says a Paris dispatch. There has been a constant progression in tenement architecture in Paris; so the new building is far in advance of its predecessors, from both utilitarian and hygienic standpoints.

This house presents a novelty in the fact that it is



Second Floor Plan—Four Room School

especially designed for small artisans who work at home. There are forty-eight flats in all, each of which is supplied with a specially designed workroom, in which there are not only gas and running water, but motor power as well. The minimum rent is a hundred dollars a year, and the maximum a hundred and fifty dollars. On the ground floor is a large covered playground. On each floor are shower baths, which ten-



First Floor Plan—Four Room School

ants may use free of charge. Floors and walls are tiled; the staircases are in cement. All the rooms are high, light, and well ventilated.

The whole top of the house is taken up with a flat terrace, something in the style affected by New York architects. A part of this is laid out as a roof garden and the rest as an open-air laundry.

Power and light in the house are supplied by electricity. Economical ranges are installed, so that gas

can be used for the cooking as cheaply as coal or other fuel. There has already been such a rush of tenants eager to occupy this model building that similar houses will be erected with all possible speed.

Naming the Cottage

If you're living in a cottage, for the summer or "for good,"

By all means you should give the place a name. You may not like to paint it on a signboard, but you should,

And fix the sign where all may see the same.

On situations much depends in finding names to fit; For instance, if your house is on a hill, Where trees and grass won't grow, "The Barrens" will not do for it;

But note how "Woodlawn Cottage" fills the bill.

If a neighbor's stable is all you see from window or front door,

Don't call your choice abode "The Stableview."

"The Bellevue" sounds much better, or "Prospect Lodge" is more

The sort of name that would appeal to you.

To dub a cottage on the boulders by the ocean strand "The Stonepile" is in taste the very worst;

Such cottages are always named, by those who understand,

"The Sycamores," "The Elms," or "Willowhurst."

Or if the shore is gravel where your cottage has its site,

A place where flowers could never strike a root, To call your home "The Sandbank" or the "Henscratch" isn't right;

"Rose Cottage" or "The Woodbines" ought to suit.

And if of architectural charm your house is quite devoid

(As I've observed is usually the case),

"The Weatherboards" or "Drab-paint Shack" as names are not employed;

"The Turrets" is so much less commonplace.

In short, avoid such names as "Townline Dumps" or "Back-fence View,"

Their vulgar truth be sure should bar them out;

But aim for names poetical, or what seem such to you, And you'll like your cottage more without a doubt.—

There isn't much use of a man who can't climb the steps to his house without wobbling, ever trying to climb the ladder of fame.

When a man has reached the age of sixty-five and can eat mince pie with immunity from pain, he may consider his life a success!

Bond in Brickwork

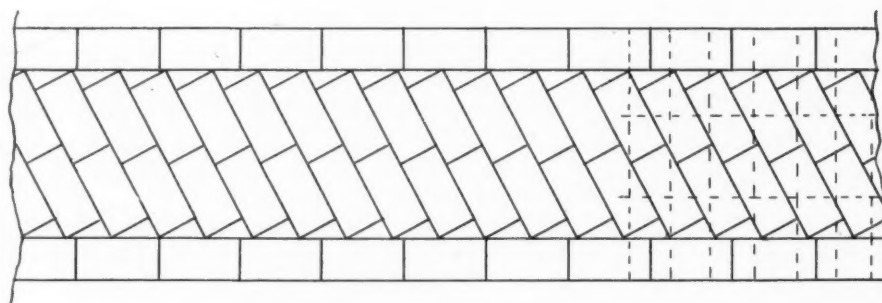
THE SECOND OF A SERIES OF ARTICLES ON BRICK MASONRY CONSTRUCTION—THE PROPER BONDING OF THICK WALLS AND OF JUNCTIONS OF CROSS AND MAIN WALLS

By T. B. Kidner

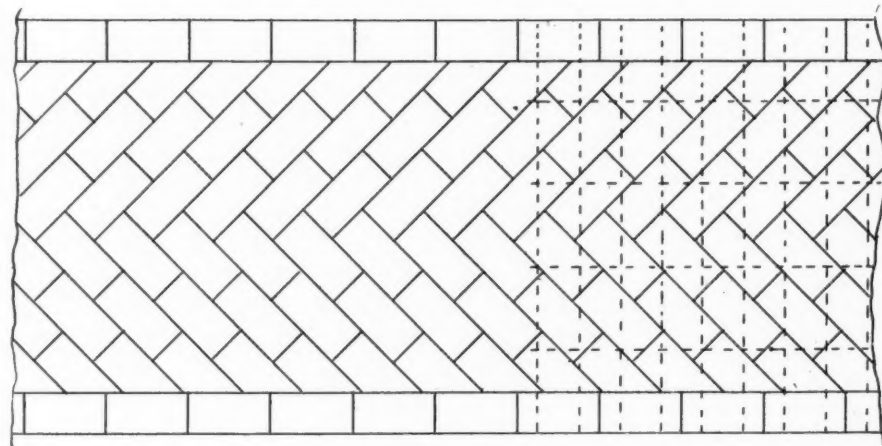
THE article in the June number dealt with bond, chiefly with regard to the appearance and qualities of some of the better-known bonds; and incidentally with the problem of obtaining proper bond or lap in succeeding courses by means of closers so as to leave a space half the width of a brick and as long as the full thickness of the cross wall. Into the space thus formed is laid the projection from every other course in the cross wall, as indicated in the illustrations. Where there is an even number of

BOND IN BRICKWORK

Raking Bonds for
Thick Walls.



Diagonal Bond



Herring-Bone Bond

at or near the angles and stopped ends of walls.

Another place in brick walls where bonding problems arise is at the junctions of cross walls with main walls. The accompanying illustrations are of some typical cases of such junctions, and show that the methods for the several thicknesses are identical. A space is formed in the main wall by inserting a closer

half bricks in the thickness of the cross wall, the projection is always in the header course, but in the case of $1\frac{1}{2}$ -brick cross walls, or any other odd number of half bricks, of necessity the projection is partly header and partly stretcher. The alternate courses simply butt against the face of the main wall Fig. B.

In modern practice, in all first-class work, hoop iron

BOND IN BRICKWORK

at Junctions of Cross &
Main Walls

Fig. 1

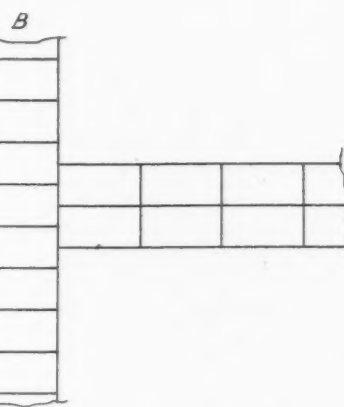
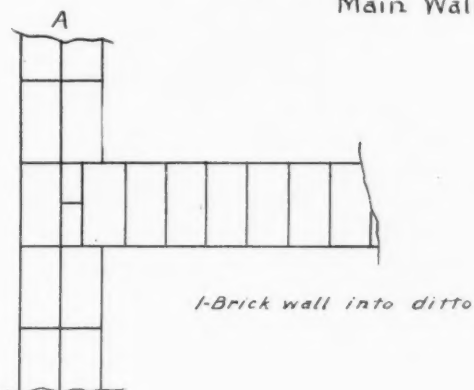


Fig. 2

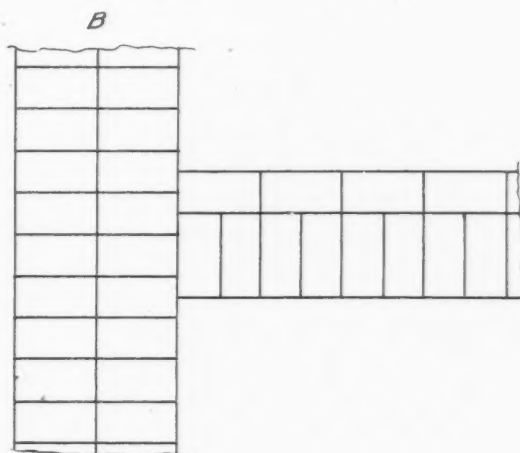
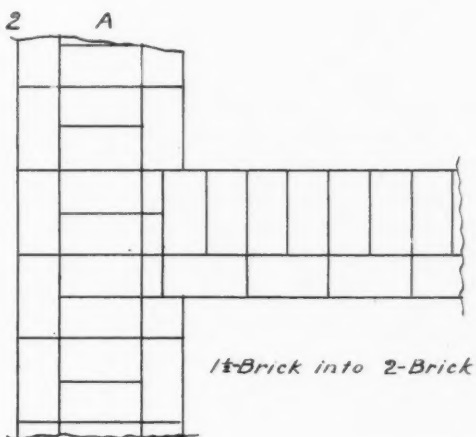
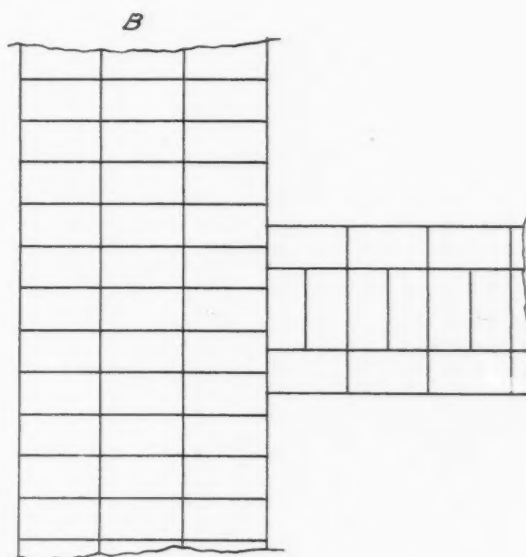
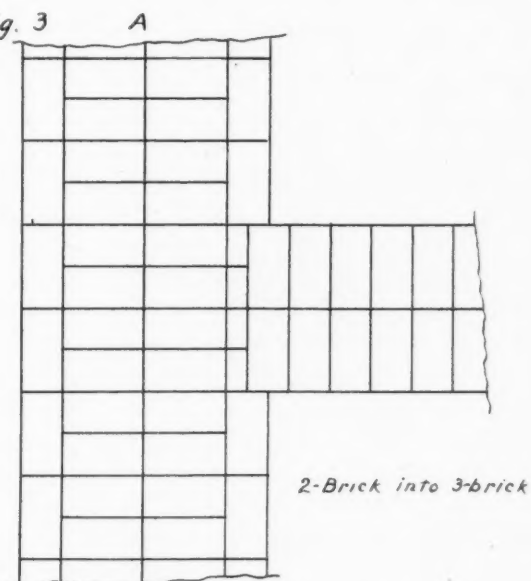


Fig. 3



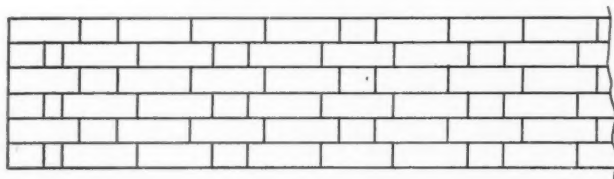
ties are used at junctions of cross and main walls in addition to the bond formed by the bricks themselves. The strips of iron are usually galvanized before being laid in the mortar or cement; or, if that is impossible

they are dipped into boiling tar and afterwards thoroughly sanded. The ends of the strips should be turned down into vertical joints of the brick work. If carried out in this way there is no doubt that hoop

iron bonding affords an exceedingly good method of strengthening brick walls at all angular junctions.

The question of the interior bond in very thick brick walls has received considerable attention from architects and engineers, owing to the fact that the thicker the wall the weaker it is longitudinally, while at the same time its transverse or cross strength increases with the thickness. This is due to the practice of making all interior bricks headers. Several methods have been devised to overcome the defect of

Scotch Bond



longitudinal weakness thus arising. The illustrations show two of these methods; being two different forms of "raking" courses, as they are termed.

The first of these is known as diagonal bond and is suitable for walls from two to four bricks in thickness. A course as in illustration is introduced in the wall every second, fourth, or sixth course. When used in every second course, they are covered by a course of headers, and the succeeding diagonal course is inclined in the opposite direction to the previous one. No particular angle is assigned for diagonal bond; the bricks being laid so that their corners just touch the boundary or facing courses. In walls of an even number of half bricks in thickness, the diagonal bond is laid in the course which presents stretchers

on each face. The small triangular spaces are left open or merely filled with mortar. While upon the question of filling these spaces reference must be had to a practice much recommended some years ago, but now generally condemned; that of pouring a thin grout of watery mortar or cement over each course of bricks when laid. This was considered to be a good method of thoroughly filling all interstices, and making a solid mass of the wall. Experience showed, however, that the excess of water in the body of the wall when grouting was practiced caused serious trouble in thick walls, and the method has now been abandoned in favor of filling each vertical joint and crevice with the ordinary mortar, such as is used in bedding the courses.

The second raking bond illustrated is known as "herring-bone," and is used in the interior of walls of four bricks and upwards in thickness. The bricks are laid at angle of 45 degrees, commencing at the center line of the wall and working towards each face. As in the case of the diagonal bond, at least one course of headers is interposed between successive herring-bone courses, and the direction of the herring-bone courses is also changed with each one. The dotted lines in the illustrations of the two raking bonds indicate the positions of the headers in the course below and show that raking bonds are effectual in preventing any joints from coinciding in succeeding courses. The weak point in diagonal and herring-bone bond is that there is no connection with the raking bricks and the face; hence the rule of not having two raking courses together.

House Chart

SKETCH SHOWING THE POSITION AND FORM OF DIFFERENT STRUCTURAL MEMBERS AND GIVING THE NAME OF EACH—MUCH VALUABLE INFORMATION IN CONDENSED FORM

By Albert Fair

THE object of this chart is to give the names of various parts of a frame house. On account of the limited space, only one story and roof could be shown, but this does not matter much, as the second or third stories would be similar to the first.

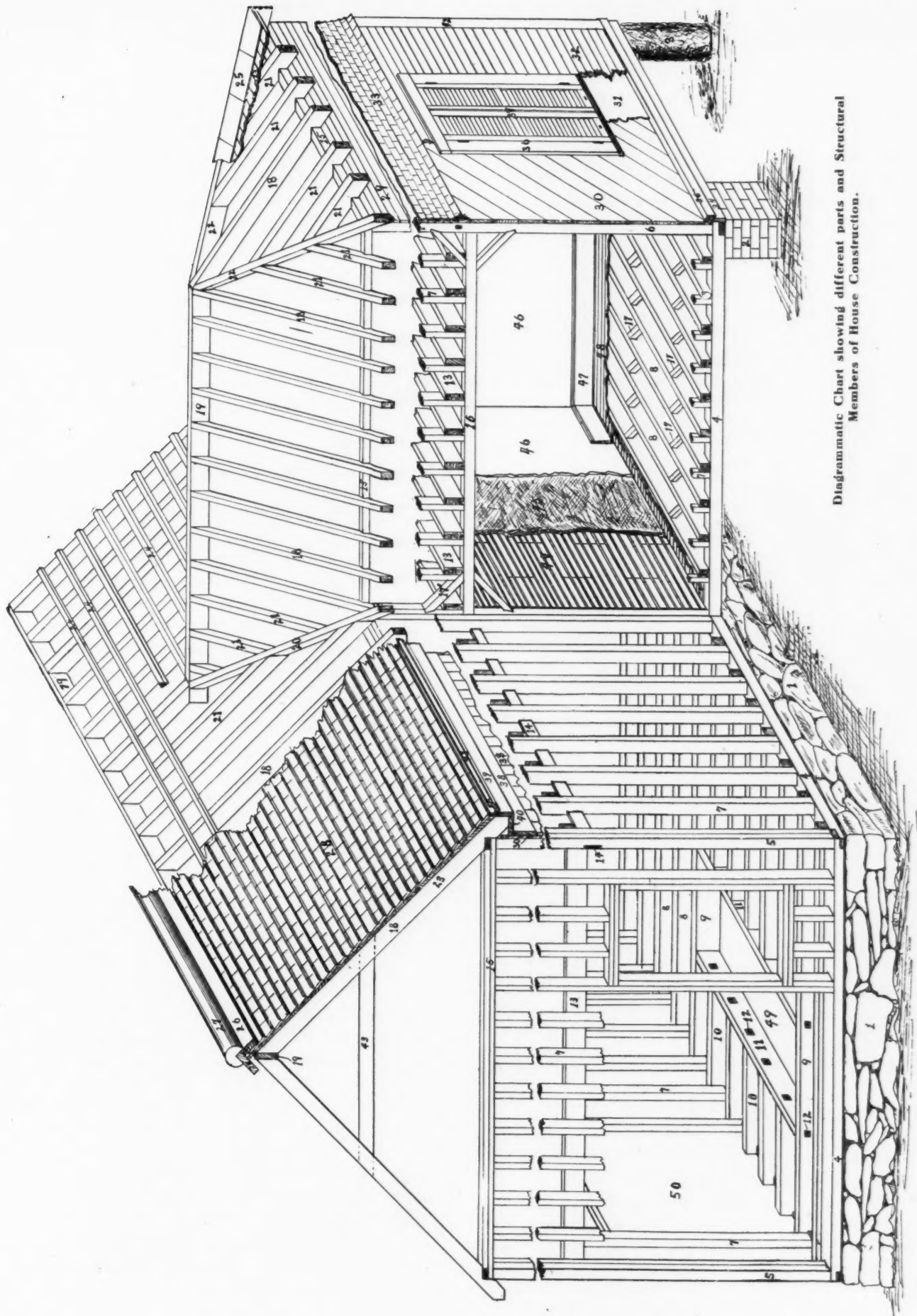
To show as many of these various parts as possible, the house is arranged in a peculiar manner, parts being omitted here and there, while many parts are drawn larger than they should be so as to show them clearly.

The main body of the house, toward the left, is the balloon-framed type, while the wing, toward the right, is of the braced-frame type.

The names of the various parts are as follows:

- | | |
|----------------------------------|---------------------------------|
| 1. Stone foundation. | 7. Studding. |
| 2. Brick pier or pillar. | 8. First story beams or joists. |
| 3. Post. | 9. Trimmer. |
| 4. Sill. | 10. Tail beam. |
| 5. Corner post of balloon frame. | 11. Header. |
| 6. Corner post of braced frame. | 12. Mortise and tenon joint. |

- | | |
|-----------------------------------|---------------------------------|
| 13. Second story beams or joists. | 32. Clapboards or siding. |
| 14. Ribbon or girt strip. | 33. Shingle siding. |
| 15. Plate. | 34. Water table. |
| 16. Girt. | 35. Pitched cap of water table. |
| 17. Bridging. | 36. Window frame. |
| 17 ¹ . Brace. | 37. Shutters or blinds. |
| 18. Common rafters. | 38. Frieze. |
| 19. Ridge. | 39. Facia. |
| 20. Valley rafter. | 40. Planceer or plancher. |
| 21. Jack rafters. | 41. Gutter. |
| 22. Hip rafter. | 42. Corner board. |
| 23. Roof sheathing. | 43. Collar beam. |
| 24. Purlins or shingle lath. | 44. Lath. |
| 25. Flashing. | 45. Rough plastering. |
| 26. Ridge board. | 46. Finished plastering. |
| 27. Ridge roll. | 47. Baseboard. |
| 28. Shingles. | 48. Flooring. |
| 29. Horizontal sheathing. | 49. Well hole (for staircase). |
| 30. Diagonal sheathing. | 50. Door opening. |
| 31. Sheathing paper. | |



Diagrammatic Chart showing different parts and Structural Members of House Construction.

The Use of Wainscoting

HOW IT IS PUT ON TO OBTAIN THE BEST RESULTS—METHODS OF GOOD AND BAD PANELING AND OF OTHER INTERIOR FINISHING DESCRIBED.

By Dwight L. Stoddard

IT IS said that wainscoting was originally nothing but flooring set up on end a few feet high all around the main rooms of the house so as to keep the large families of children from kicking the plastering off. Now, of course, that condition has passed away, for we no longer have the large families of children, so it is said. But be that as it may, even if wainscoting is not used as much as it used to be, it is still used to a greater extent than many realize.

Fig. 1 illustrates in a general way the construction of wainscoting. If there is no special piece for the purpose, nail a common 1 by 4 as furring on the studding where the top and bottom of the wainscoting

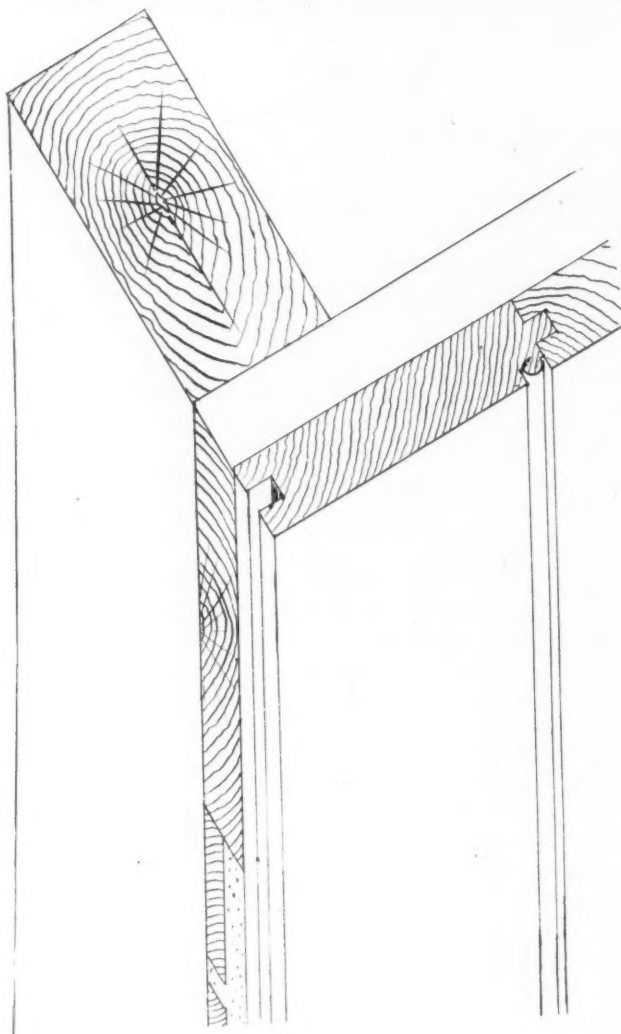


Fig. 1

is to be fixed, and, if it is of much length, nail another in the center. Of course, if very high, possibly you would need others. Now this straightens up the work ready for the wainscoting. To make the best job it should be plastered in back of the wainscoting, as illustrated. Of course, in cheap work, many times they do not bother to plaster where it cannot be seen in any part of the house, especially under the wains-

coting, and I will admit it answers very well. Again, often on cheap work, they do not bother to put on anything to work or nail to, just put it right on over the plastering, and simply nail every 16 inches where the studding are and let the rest go. I will admit again that a fairly good job can be done in that way;

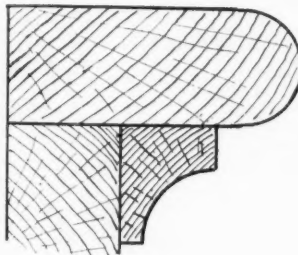


Fig. 2

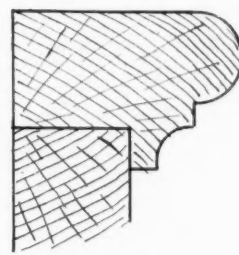


Fig. 3

yes, there is always more ways than one to do anything.

Now, in the olden times, they undoubtedly found that flooring standing on end showed the shrinkage in the joints far more than the flooring lying down. The shrinkage in an ordinary floor does not show cracks so readily, since they become filled up. The idea of running a bead in the wainscoting was not only to be ornamental, but to avoid showing the shrinkage to some extent. Then, for the same reason, the

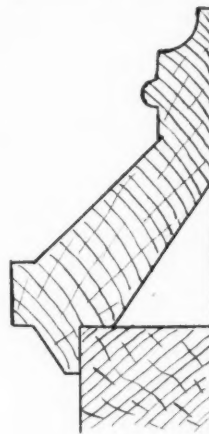


Fig. 4



Fig. 5

center bead was used, and similar wainscoting of many different patterns have come into use.

Fig. 2 shows the cap and cove which finishes the top, while a quarter round or something similar completes the bottom. Fig. 3 shows one where the cap and cove is made all in the one piece. Fig. 4 shows one pattern of a molding to complete the top. There would hardly be an end to the different moldings.

Fig. 5 shows another molding, which is generally used on thin wainscoting, or where the wainscoting does not project its full thickness beyond the plastering. This molding was used a great deal, and it looks very well when completed; but any molding

filled with reeds and beads is a great dust catcher; it is quite impossible to keep them from becoming dark, even if not really dirty.

Now, for ordinary wainscoting, the only thing to do is to nail it up just as you would flooring, and let the beads come where they will. I have no doubt that some would say that that is the only way to do it; yet, on a real good job, care should be taken to watch which way to break the corner to make it come out the best, and to space out and see how you are coming, working off a little from each one, so as to make it come right and alike as near as possible at the corner and at both sides of the openings. Now I will admit this care does not have to be given often, for the best jobs of wainscoting are made in panels and, of course, all these matters have to be figured

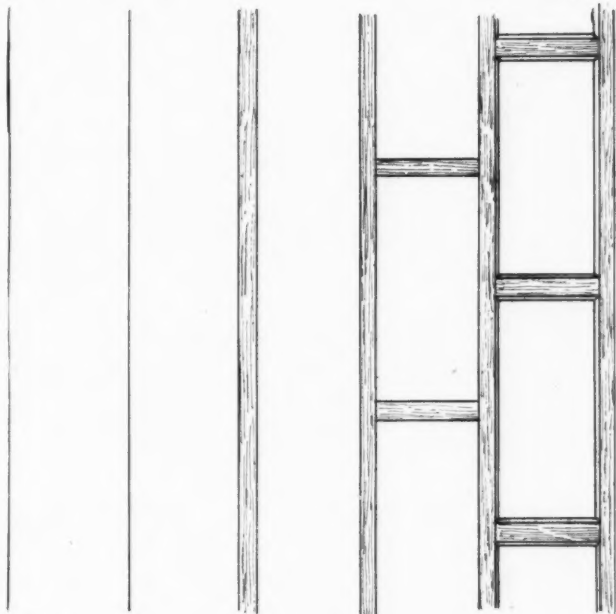


Fig. 6

out in advance, and the panels made larger or smaller, to suit each space in the room.

Fig. 6 illustrates a cheap panel job that I have often seen used on very good work. Sometimes around a stair it happens that you want to finish it up with some panel work, yet you have never taken the time to have it figured out and a proper panel made. Therefore, when you get to where you have got to have it right away, you get some $\frac{3}{8}$ boards the width you want and put them on; then get some $\frac{3}{8}$ two inches, or whatever width you want, and put over each crack; then put in your cross pieces as you want them and break a little molding around your panel, and you have the job complete.

Fig. 7 shows in a general way, panel wainscoting. There is no way better for it to be put together than the old-fashioned way of plowing for mortise and tenon. The waste of wood has, to a certain extent, done away with the tenon; and dowels are used in their place. On some cheap jobs, they even do away with the dowels and fasten the joints together with

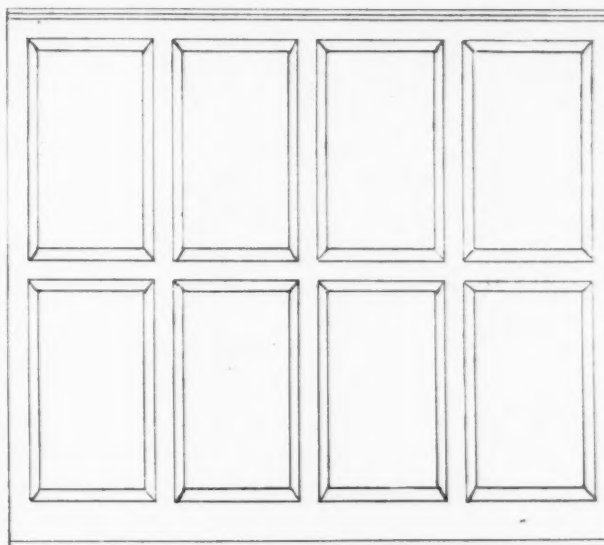


Fig. 7

corrugated nails. The panels can be raised or molded as desired; and can be in any size or shape wanted.



Trade Schools to be Established

In Portland, Oregon, the Board of Education announces that at the beginning of the school year in September there will be established, under the direction of the Board, the Portland School of Trades.

The object of this school will be to furnish instruction to the boys of Portland in some trade, that they may be better fitted for their life work. Opportunity will be given for instruction in the following trades: carpentry, cabinet making, pattern making, molding, electrical construction, machine shop practice, mechanical and architectural drafting and plumbing. Such academic branches as English, mathematics, applied physics and electricity, and industrial chemistry will be included in the course. Special attention will be given to these subjects as they relate to or have bearing on the trade work. The course will be three years. The equipment will cost nearly \$20,000.



Too Good for This World

Albert was a solemn-eyed, spiritual-looking child. "Nurse," he said one day, leaving his blocks and laying his hand gently on her knee, "nurse, is this God's day?"

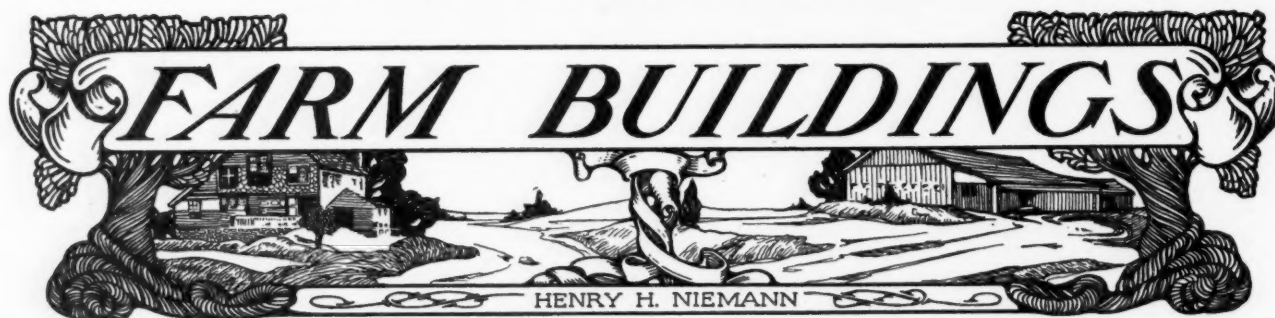
"No, dear," said his nurse, "this is not Sunday. It is Thursday."

"I'm so sorry," he said sadly, and went back to his blocks.

The next day and the next, in his serious manner he asked the same question, and the nurse tearfully said to the cook, "That child is too good for this world."

On Sunday the question was repeated, and the nurse with a sob in her voice said, "Yes, Lambie. This is God's day."

"Then where is the funny paper?" he demanded.



Modern Dairy Barn

FULL DRAWINGS AND DESCRIPTION OF A LARGE, THOROUGHLY MODERN DAIRY-FARM BUILDING—
DETAIL OF PRACTICAL UP-TO-DATE MILK COOLER

A LARGE modern dairy farm building of exceptional completeness and convenience of arrangement is presented herewith. In the one building are grouped the accommodations for the three in this case is very good. The general form of the building is that of a cross. The stanchions are arranged in a double row on the ground floor of the long cross member; the feed storage section, extend-

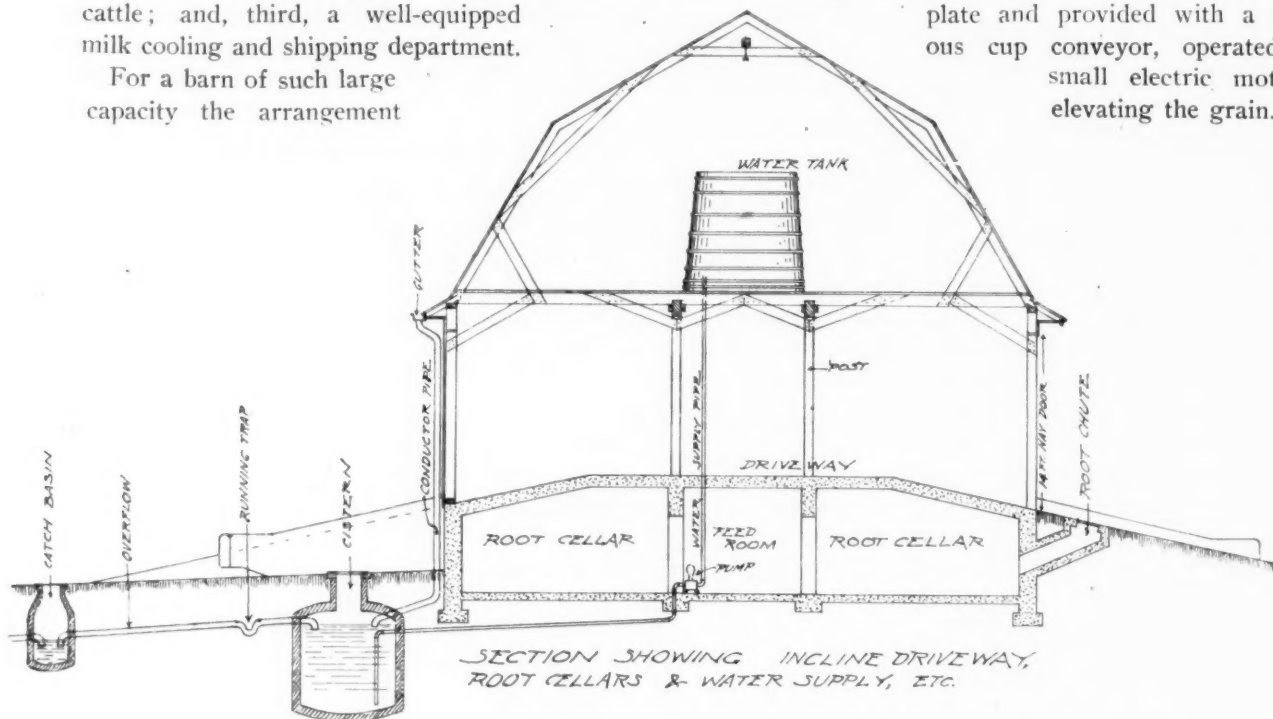


FRONT ELEVATION

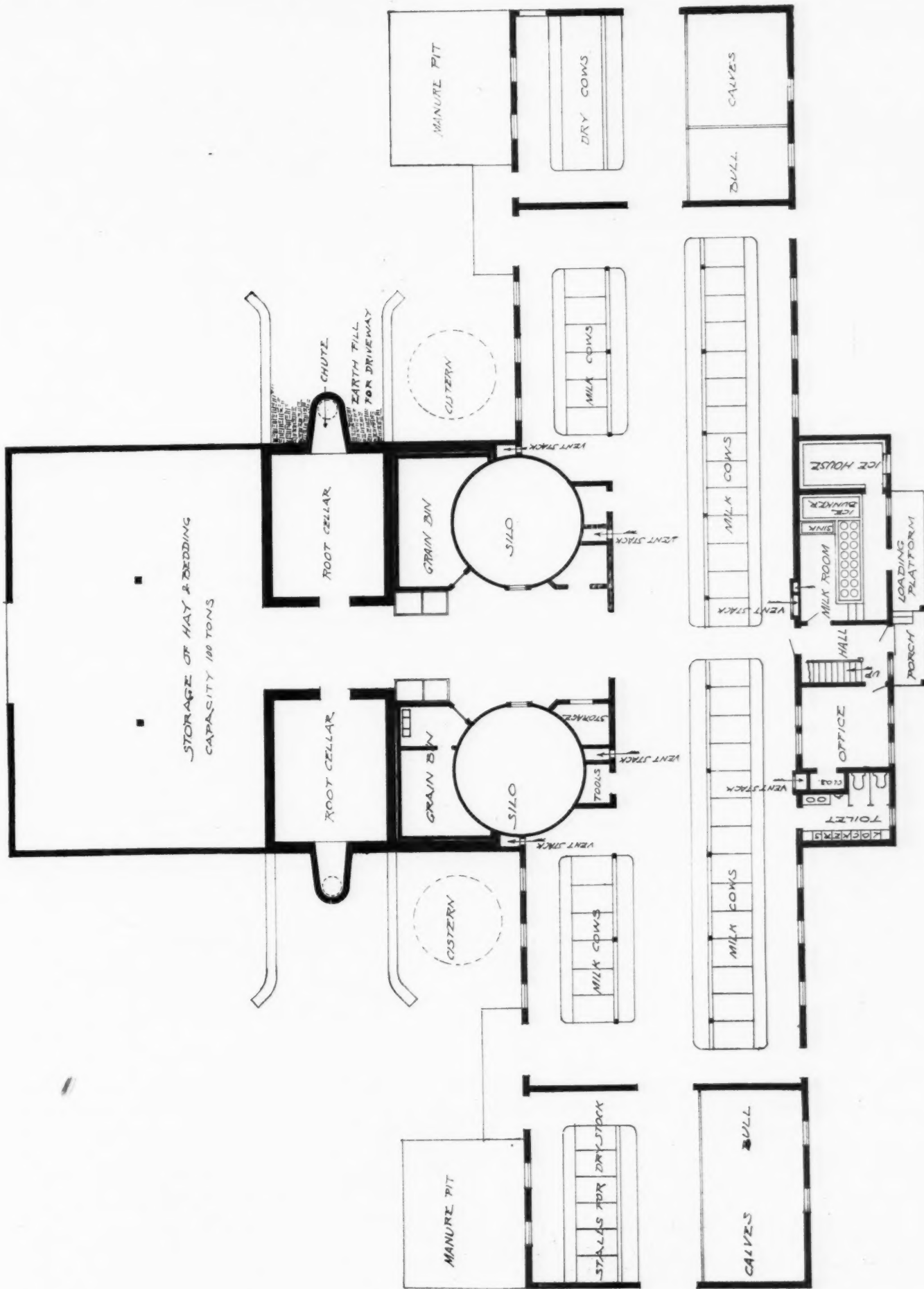
branches of dairy farming: There are, first, sanitary stabling for forty milch cows, twelve dry cows, two bulls and numerous calves; second, improved storage capacity, accurately figured, for ensilage, grain, roots, dry fodder and bedding sufficient for that number of cattle; and, third, a well-equipped milk cooling and shipping department.

For a barn of such large capacity the arrangement

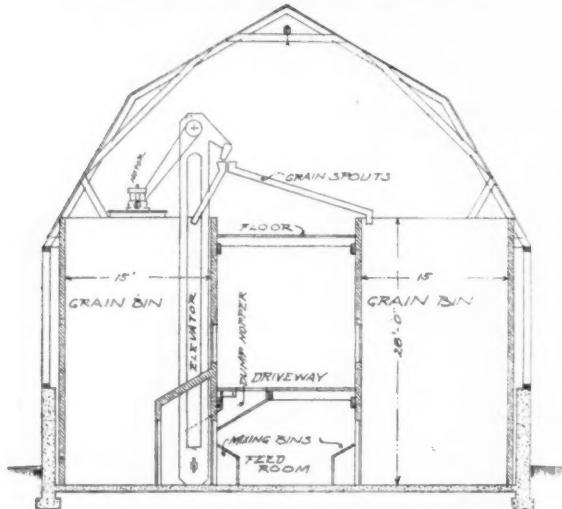
ing back at right angles to this, joins it at the middle. There, two large silos are located with the feed mixing floor between—thus having a very central location. The grain bins are next the silos, extending 28 feet from the ground floor to the plate and provided with a continuous cup conveyor, operated by a small electric motor, for elevating the grain.



SECTION SHOWING INCLINE DRIVEWAY, ROOT CELLARS & WATER SUPPLY, ETC.



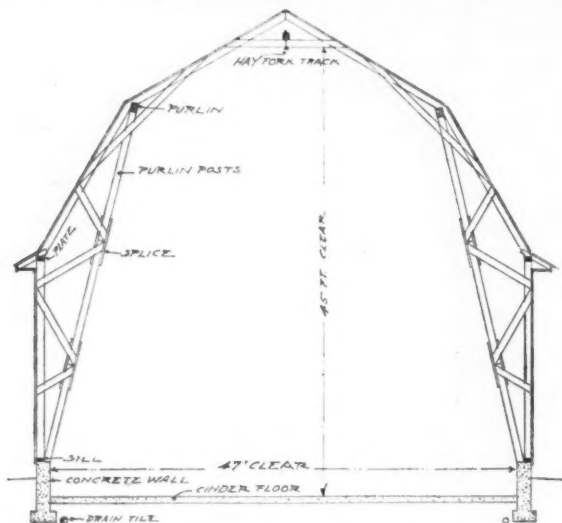
A feature in connection with the root cellars is worthy of notice. They are located on the ground floor under the "barn floor" or elevated driveway. They are filled from the outside through inclined chutes. In that way the reinforced concrete floor was not weakened by trap door openings through it.



SECTION SHOWING GRAIN BINS,
GRAIN ELEVATOR, MIXING BINS, ETC.

This design provides for the rain water from the roof to be conducted to two buried cisterns, from whence it is pumped to a large tank overhead, as needed.

In the front of the building, completely separated from the barn and stable, are the office and milk handling rooms. As will be observed from the plans the ice house is very conveniently located to the cooling



SECTION THROUGH HAY ROOM

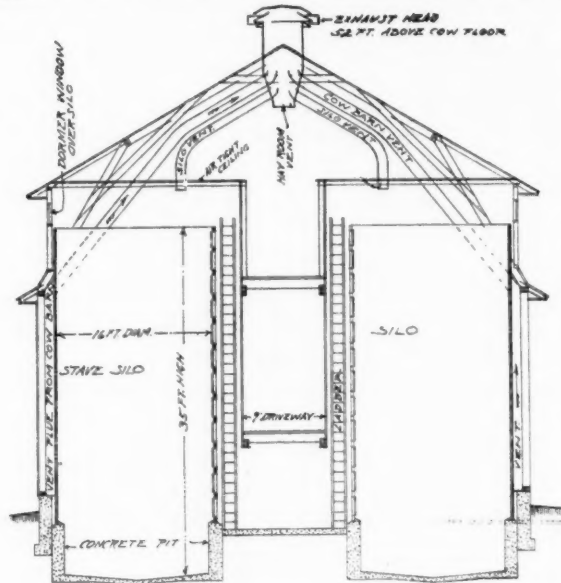
room. A detail drawing of the milk cooler is given, showing the ice bunker and compartment for the milk cans in cross section. All the walls and covers of this chest are made very heavy, built up in layers of insulating material to keep out the heat.



Solving a Great City's Water Problem

Away up on Esopus Creek in the rugged Catskills, back of the city of Kingston, and along a ninety-mile

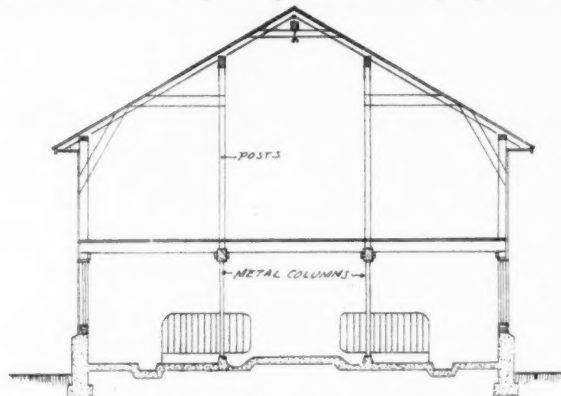
route leading down to a site just over the New York City line, a force of nearly five thousand engineers and contractors' workmen are engaged today on the biggest task of its kind ever undertaken—the task of



SECTION SHOWING SILOS
AND VENTILATION FLUES

constructing the gigantic new water supply system which New York City is creating for itself at a cost of \$162,000,000; the system which in eight years, or a little longer, will be delivering into the city 500,000,000 gallons of water daily and which will avert, it is hoped permanently, the impending threat of water famine from our greatest city.

When finished the Catskill aqueduct will be able to carry not only the 250,000,000 gallons of water daily which the Ashokan reservoir will furnish, but also the additional quantity which it is proposed later



SECTION THROUGH
COW STALLS

on to draw from other watersheds of the Catskills. By 1915, it is calculated, New York will be using 710,000,000 gallons of water every day, and to meet the needs of a time when even Ashokan will not be able to supply the city's great thirst plans have already been made to utilize further the resources of the hills when needed.

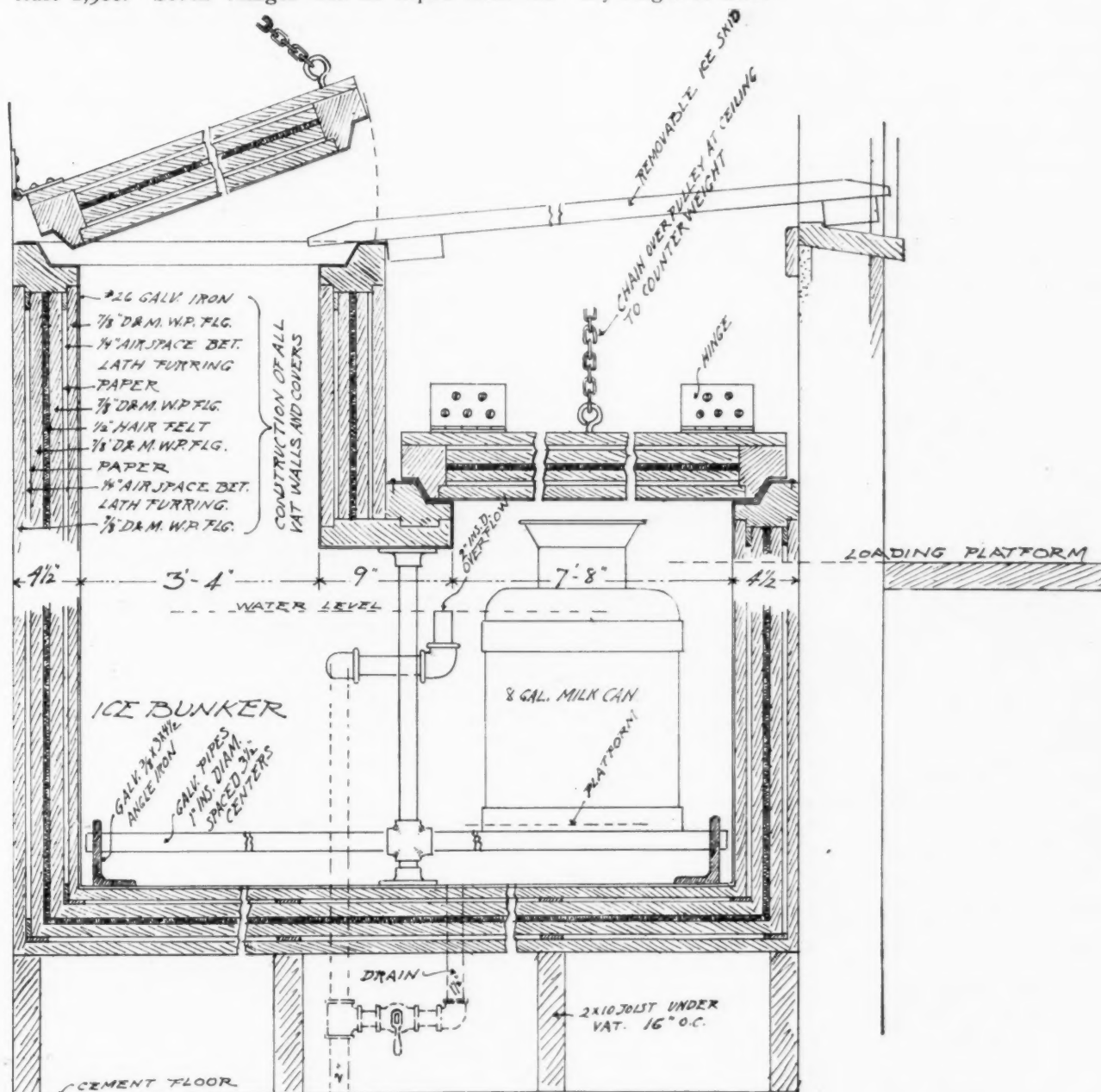
The Ashokan reservoir itself will cover an area of 8200 acres, or 12.8 square miles, divided by a dyke into two basins. It will be twelve miles long, nearly three miles

wide at its widest point, and will have a shoreline of forty miles. Its storage capacity will be 130,000,000 gallons. The maximum depth of water will be 190 feet; the average depth fifty feet. From the little village of West Hurley, eight miles west of the Hudson River, to its upper end beyond West Shokan this immense storage basin will bury under its waters an area of country having at the present time a permanent population of about 1,900 and a summer population of at least 2,900. Seven villages will be wiped from the

to carry the road around the gap thus made fourteen miles of new track will have to be located and built.

To Keep Tools From Rusting

Take two ounces of tallow and an ounce of resin; melt together and strain, while hot, to remove the specks which are in the resin. Apply a slight coat on the tools with a brush and it will keep off the rust for any length of time.



Detail of Ice Chest and Milk Cooler

map; thirty-two cemeteries will be submerged, and 2,400 bodies buried in them will have to be removed to other resting places. Sixty-four miles of public highways will be included within the reservoir or discontinued because of its building and twenty-five miles of new highways will have to be built. The Ulster and Delaware Railroad, which runs through the Esopus Valley, will be submerged for eleven miles, and

Nothing Doing There

Tourist—I am looking for a nice quiet place to spend my vacation in.

Man Who Won't Advertise—You mean a place where you can have absolute rest—where there is nothing doing?

Tourist—Yes; do you know of such a place?

M. W. W. A.—You bet! My office.



The Water Level

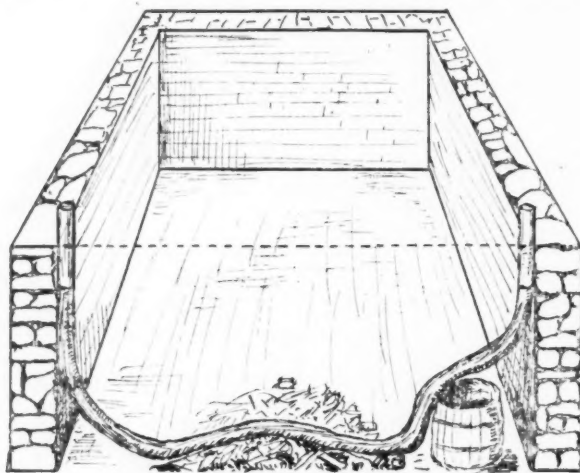
To the Editor:

Detroit, Mich.

I would like to see very much, if possible, an article on the water level, how it is made and how used? Not long ago I saw a small hose, on a job, with a glass tube inserted in each end of the hose (the best kind of a level there is); but when I inquired how it is used that ended the subject. No carpenter seemed to be able to tell me anything about it while most of them did not know what it was.

PHIL. HOFFELLER.

Answer: A water or hydrostatic level works on the principle that water always seeks its own level. Have a rubber



tube with a piece of glass tubing at each end, and make a mark on each glass. Hold in a position as shown in the figure, the marks being flush with the top of the wall, and fill with water, say, in the right tube, until it reaches the mark; now examine the left tube. If the water reaches the mark exactly the two sections of the wall to which the level is applied are level. Of course the water will rise above the mark if the left hand end of the walls is too low. If the water does not reach the mark then the wall is too high.

C. G. PEKER.

Squirrel Cage Design Asked

To the Editor:

Milton, Iowa.

I seat myself today to write you a few lines in regard to making something for the home. I would like you to ask all of the carpenters that take the magazine if they know of any designs for making a squirrel cage. I would like for some one to tell me the best way to make one. I would like to have quite a large one, one large enough for a pair, and have plenty of room.

My boy has squirrels and has a small cage for them. But he wants a larger one. I would be very glad to have some one tell me how to make one and what kind of material it should be made of; and I would like to have a diagram of it.

Squirrels are nice pets for any one to have; and if they have a nice large cage to play in with plenty of room, and a

large wheel at one end for them to roll there is lots of enjoyment watching them.

I would like to have a design for a large one, say four or five feet square or a little smaller. It should be lined with tin on the inside so that they could not gnaw it.

J. E. DONAHO.

Suggestion for Mr. Stivers

To the Editor:

Spokane, Wash.

I always look forward to the coming of the AMERICAN CARPENTER AND BUILDER, and always find something new and interesting in it. It is a great help to me in many ways. I like to hear from my brother craftsmen, and learn their views, and ways of doing things.

I notice brother A. C. Stivers' house and his desire for criticisms. Would suggest that he omit the small window, and move the large one forward so that the rail will be about the place where top of small window now is; extend it out about 12 inches; put on a suitable roof and bracket or basket support; this would correspond with the plainness of the house. I would roof it simply with a half gable, or a roof similar to the one on the bay.

The main roof could be improved by adding an easing, or small gable window, and I would suggest that, if the chimney is a good one, and safe, he take away the fence that surrounds it; I do like to see a nice chimney with an unobstructed view.

We are doing more building than ever in this city, but labor conditions are not of the best, as too many men are coming here, and many cannot find steady employment.

Your house furniture exhibit in the Home Workshop is just what I was looking for; I would like working plans of such furniture, as I wish to make some.

J. V. LEYDIG.

Concrete Foundations and Walls

To the Editor:

Augusta, Ga.

I am about to build for myself an 8 room residence with cellar under whole house, excavation 4 ft. in compact sand. I propose to build foundation up to ground line of concrete of crushed granite or clear gravel, best coarse sand and cement. Above ground 3 ft. of wall will be of concrete blocks, rock faced, and rest of wall 22 ft. of tool faced blocks, —all made wet mixture of same materials as foundation. Blocks will weigh 50 lbs. each.

Will you kindly tell me what least dimensions will be perfectly safe for this foundation; what proportion of materials best, and if necessary to use the cone principles shown in your July number, p. 477? I can get quite a lot of old 1¼ in. steam pipe very cheaply. Would this be good for reinforcing this foundation and thereby save expense in concrete?

If I should not like the tool face concrete blocks when finished I shall plaster or stucco body of house with ¼ in. of cement.

Your magazine has been a source of pleasure and profit to me for some months past and will, I hope, continue to be the same.

S. B. OWENS.

Answer: Make footing 2 feet wide and 6 inches high,

upon which build wall 12 inches thick, then hollow block wall 12 inches thick to first floor joist, 10 inch block wall to second floor joist and 8 inch block wall for second story to roof.

If ground is soft use a footing 3 feet wide and one foot high, or use the concrete pile method shown on page 477 July '08, AMERICAN CARPENTER AND BUILDER, reinforcing your footings with two pipes as you suggest; very rusty pipe have no strength, however. One cement, three sand and five crushed granite will make good footings and monolithic walls.

One cement, two sand and three crushed granite from dust to hazelnut size makes handsome rock faced blocks of rough cast type.

FRED W. HAGLOCH.

Sectional Storm Shed

To the Editor:

Morris Park, L. I.

I would like some of the readers of your valuable paper to show me through the correspondence columns with sketches how to construct a sectional and portable storm shed with glass sides and glass door of neat design for a front porch.

JOHN H. WHITEFORD.

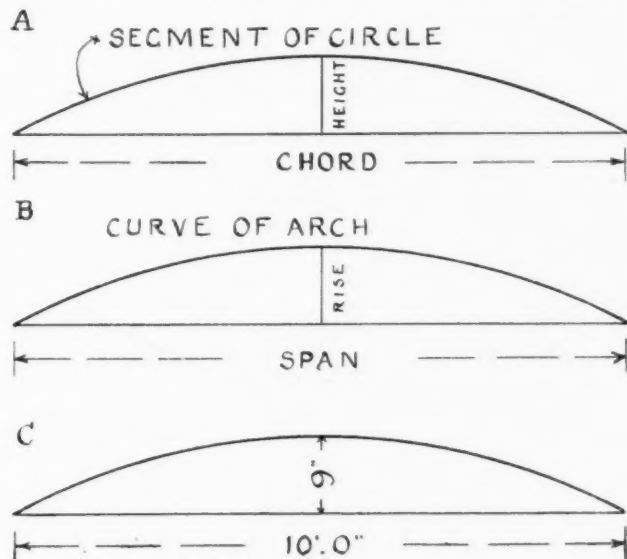
To Find Center of Arch

To the Editor:

Delano, Minn.

Please explain through your correspondence department, the rule for finding the length of the radius of a segment where you have the length of the chord and the height of the segment given. I can draw the curve by nailing three wooden strips together and forming a triangle, but I do not know how to find the center without trying for it. W. C. BATDORF.

Answer: The rule for finding the length of radius of a segment when its chord and height are given may be stated in several ways. One of the best ways (because it may easily be committed to memory), is stated in terms belonging to



arches, for most of the cases where carpenters and practical builders have to work this problem have to do with arches.

The Diagram A shows the geometrical terms used by our correspondent and the diagram B their practical equivalents as used in building.

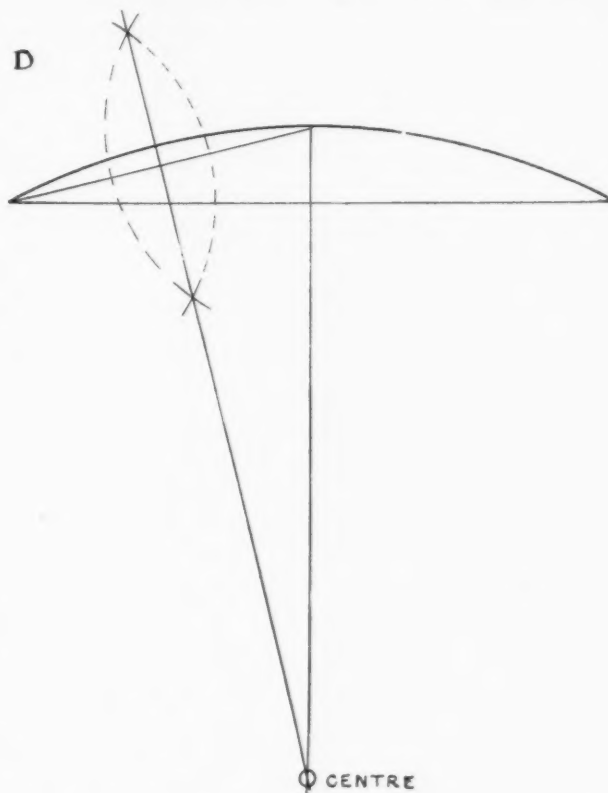
Rule: To the square of half the span add the square of the rise and divide by twice the rise.

For example, suppose that C shows a given segmental arch of 10 feet span and 9 inches rise. Half the span would be 5 feet or 60 inches. The square of this (60 times 60) would be 3600. The square of the rise (9 times 9) is 81. 3600 plus

81 is 3681, which divided by 18 (twice the rise) gives $204\frac{1}{2}$ as the length of radius.

It must be noted that feet must be multiplied by feet or inches by inches; accordingly in the foregoing calculation the half span is taken in inches so as to be in same terms as rise.

For small segments, such as arches over windows and doorways, the geometrical method shown in diagram D is



often more convenient than an arithmetical calculation. A line is drawn at right angles to the chord line through its centre and one-half of the segment is bisected by means of intersecting arcs drawn with a pair of compasses. The line of bisection cuts the centre line in the centre of the circle of which the segment is a part.

T. B. KIDNER.

Problem Answered

To the Editor:

Fort Meade, Fla.

Here is a solution to H. E. Graham's problem in July AMERICAN CARPENTER AND BUILDER. "How far from the top end must a timber be cut which is 30 feet long, 10 inches square at top and 12 inches square at bottom, so that the top piece will contain as many feet of lumber as the bottom piece?"

A pyramid with a 12 inch base and the taper given would be 180 ft. long. Such a pyramid would contain 60 cubic feet. We will consider the timber as the 30 foot frustum of such a pyramid.

$$60 - \frac{1}{8} \times 10^3 = 25\frac{5}{8} \text{ the cubic feet in timber given.}$$

$$25\frac{5}{8} \div 2 = 12\frac{5}{16} \text{ contents of half of timber.}$$

$$60 - 12\frac{5}{16} = 47\frac{11}{16} \text{ contents of second pyramid.}$$

Let X=one side of cut to be made.

$$\text{Then } 180X^3 = 3 \times 47\frac{11}{16} = 142\frac{1}{8}.$$

$$X^3 = .789351851 +$$

$$\text{And } X = \sqrt[3]{.789351851} = .924 +$$

$$180X = 180 \text{ ft. } \times .924 = 166.32 \text{ ft. length of second pyramid.}$$

$$180 \text{ ft.} - 166.32 \text{ ft.} = 13.68 \text{ ft. length of piece cut from base.}$$

$$\text{And } 30 \text{ ft.} - 13.68 \text{ ft.} = 16.32 \text{ ft. distance of cut from top of timber.}$$

ERNEST B. SIMMONS.

Strength of Posts and Rafters

To the Editor:

Convent, La.

Will you please set me right on the following questions?

1. The enclosed sketches (not reproduced) show two pieces of timber to be used in compression; that is, as posts. One piece is 4 by 4 inches, the other 4 by 6 inches. If the ultimate strength of the material is 10,000 lbs. per square inch in short pieces, how is the working strength or safe load for long posts obtained? What would be safe load for given pieces if they were 12 feet long?

2. In what manner is the strength of materials affected when used as rafters, and how is their strength ascertained?

3. What is the greatest length that a 2 by 4 could be used on (a) $\frac{1}{2}$ pitch roof (b) 1-2 pitch roof; each covered with shingles?

B. P. TUREAUD.

Answer: Question 1. The formula generally used by engineers for determining the safe load which may be placed upon posts or pillars is known as "Gordon's" formula. As usually stated it is a somewhat difficult one to grasp unless one is well up in mathematics.

Trautwine gives a simplified adaptation of Gordon's formula prepared some years ago by Mr. Shaler Smith, C. E., of St. Louis, for the purpose of obtaining the breaking loads of square or rectangular pillars or posts of moderately seasoned white pine or common yellow pine, with flat ends, firmly fixed and equally loaded. This formula is based upon numerous experiments made by Mr. Smith, and is stated in Trautwine's work as in Fig. 1.

Fig. 1.

Breaking load in lbs. per
RULE. *sq. inch of area of*
pillar of W. or Y. pine } =

$$\frac{5000}{1 + \left(\frac{\text{Sq. of length in ins.}}{\text{Sq. of breadth in ins.}} \times .004 \right)}$$

Example—To find the breaking load per square inch of a white pine pillar 12 inches square and 30 feet, or 360 inches long. Here the square of the length in inches is 360 times 360, equals 129,600. The square of the breadth is 12 times 12, equals 144, and 129,600 divided by 144 equals 900, and 900 times .004 equals 3.6, and 3.6 plus 1 equals 4.6. Finally 5,000 divided by 4.6 equals 1,087 pounds, the required breaking load per square inch. As the area of the pillar is 144 square inches the entire breaking load is 1,087 times 144, equals 156,528 pounds, or 69.9 tons.

To work out the strength of your pillars, take the fore-

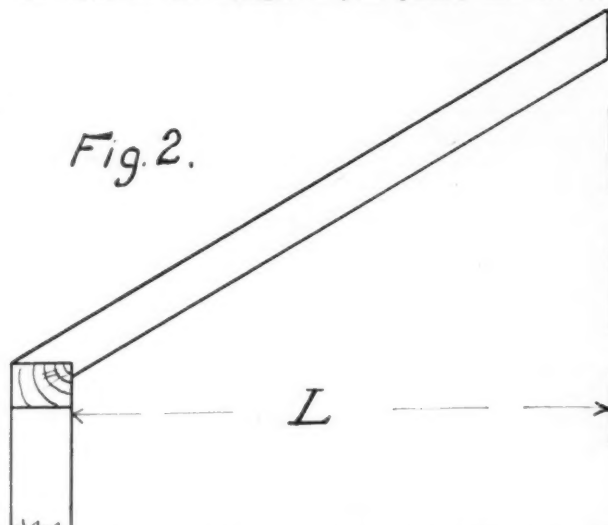
and Georgia pine with 8,500, and so on.) As a matter of fact, however, very few engineers or architects ever bother themselves with formulas, but rely instead on tables which have been worked out from the formulas. Such tables are to be found in the various engineers' "pocket books" which are published, and are generally trustworthy and reliable.

In such a table now before the writer, the breaking load of a piece of yellow pine (5,000 lbs. ultimate strength) 12 feet high and 4 by 4, firmly fixed and equally loaded, is given at 5.8 tons. As your material is twice the strength used in calculating the foregoing, your result will double, that is, 11.6 tons. As this is the ultimate or breaking weight, a factor of safety must be applied to find the safe load. All the authorities agree in allowing a high factor of safety for wooden posts and in first-class practice do not trust them with more than one-sixth to one-eighth of their breaking weights for dead loads and one-tenth for live loads. Your load of 11.6 tons must therefore be divided by 6 or 8 to obtain the safe dead load, and by 10 to find the safe live load.

Question 2. On page 85, April number, in a reply to a previous question of yours, there is given a formula which can be applied to the case of rafters. In doing so, please note that the L of the formula is the run or horizontal distance in Fig. 2. The rest of the calculation is exactly as in the case of the horizontal beam on page 85, April number.

Question 3. The weight of shingles on a roof is usually taken at about 2 lbs. per square foot. If close boarded under the shingles, allow 2 lbs. per square foot for hemlock;

Fig. 2.



going formula, but substitute 10,000 for the 5,000 there given. (10,000, by the way, is very high for wood. In the well-known tables made for the U. S. Government for the census of 1880, only one wood, *lignum vitae*, gave as high a result. Black locust came next with 9,800 lbs.; mahogany with 9,000,

2½ lbs. for white pine, and 4 lbs. for yellow pine sheathing. In addition, the wind pressure must be considered and may be taken at 33 lbs. per square foot for $\frac{1}{2}$ pitch roofs and 22 lbs. for $\frac{1}{4}$ pitch. These pressures are the surface equivalents of the greatest horizontal (hurricane) pressure of 40 lbs. per foot. In northern climates it is usual to add 6 or 8 lbs. per foot for snow.

To find weight on one rafter add up these pressures and, if rafters are 18 inches on centers, multiply your total by $1\frac{1}{2}$ times the length of the rafter. Apply the formula as in Question No. 2 and you will easily see whether your rafter is overloaded.

The rule generally followed by architects in first-class work is to have a support under 2 by 4 rafters. 1 ft. 6 in. on centers, every 8 feet for a slate-covered roof and every ten feet for shingles. That is to say, long rafters should be supported by purlins, or by struts from below, at every 8 or 10 feet of their length, according to the material of the roof covering.

T. B. KIDNER.



Roof Plan

To the Editor:

Winfield, Kan.

I herewith enclose plan of roof requested by F. R. Wright, in June number of AMERICAN CARPENTER AND BUILDER. In roofing this building I would take no account of the 6 inch offset shown on the front of house except to make cornice 6 inches wider at this place, and put a rather heavy bracket at the corner to indicate a support. If the building is two story it may be squared up at the second floor with good effect.

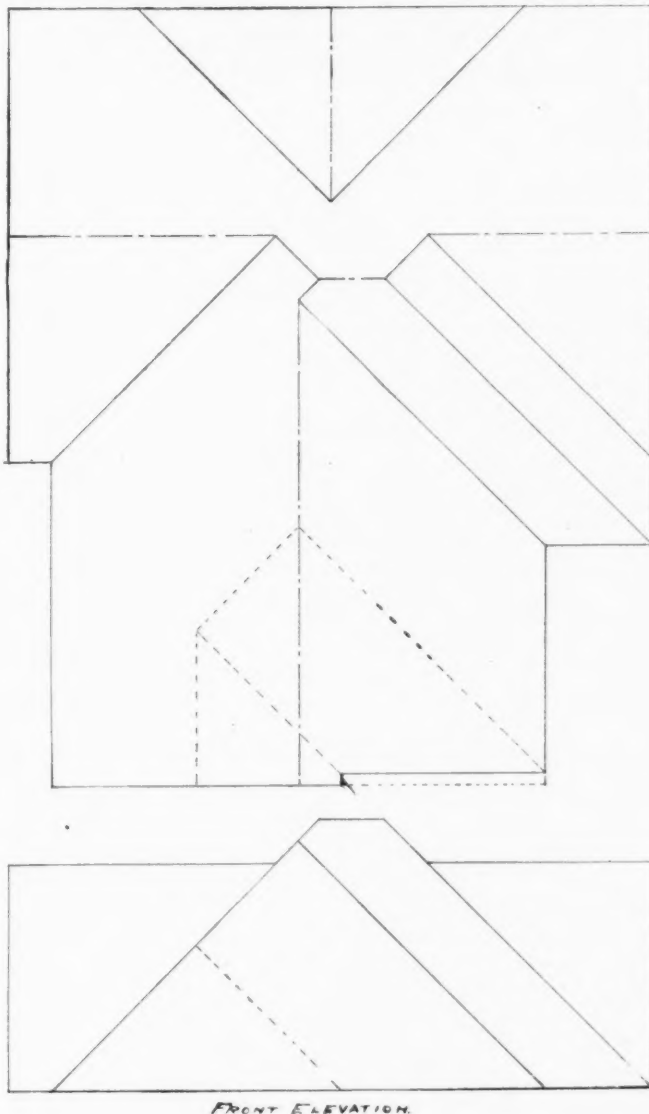
The gable in the rear is optional with the builder, but would add to the appearance of the roof.

If the 6 inch offset is shown in the roof, the dotted lines indicate the plan of its disposition.

I have been a reader of the AMERICAN CARPENTER AND

BUILDER since its beginning and though I have not before contributed anything to this department, must say that it generally receives first attention when the magazine comes to hand.

A great many labor saving ideas might be circulated among our craft to our mutual benefit if better or more general use



were made of the space given in the magazine to this purpose. Next to the knowledge of the best and quickest way of doing work, I would place that of being able to accurately estimate the cost of carpenter work on a job. Unless the young mechanic expects to continue as a journeyman all his life, he should improve every opportunity to gain and hold fast to this part of our business; he will find it of great value as he advances to higher things than mere labor.

CHAS. S. HOYLAND.

Curing Wood

To the Editor:

Vineland, N. J.

Can you tell us the proper way to cure, or season, or treat green wood with hot water, or steam, so as to prevent it from cracking or checking in seasoning, or drying after sawing into plane blocks.

GAGE TOOL COMPANY.

Answer: Treating green wood with hot water or steam may facilitate seasoning but it will not prevent checking; at least, the ordinary method of treatment will not. There are many different processes for drying or seasoning lumber

and a number of them include the use of moisture, generally in the form of steam, to do what is called sweating the wood and opening the pores before it goes into the dry kiln. Also, it is claimed that immersion in water, either hot or cold, will dissolve out part of the sap and thus hasten the drying process. For some processes, where wood is found to swell and shrink, it is possibly a good idea to dissolve out as much of the pigment, of the sap as practical; but a better plan, generally speaking, is to cut the wood in the winter when the sap is down. And as for seasoning to prevent checking, the best general plan probably is to season slowly and protect the end wood from drying out too rapidly. The moisture drying out of the end wood before it dries out from the inside causes checking; and the more rapid the drying, that is, the more the wood is exposed to hot sun, the greater is the trouble from checking.

The same thing is true if the wood is exposed to currents of air. A cool, shady place, that is, a place comparatively cool and free from strong currents of air and protected from the sun is the best place for drying blocks without checking. and then a little paint or oil on the ends of the blocks will help out considerably, too. If you care to experiment with steaming or boiling to facilitate drying you can do so by putting the blocks in almost any kind of a tank for water and a box like enclosure for steam and turn in exhaust steam instead of dry hot steam. If you use either steam or hot water be careful lest you overdo it. A few hours is generally plenty and then you will probably find that unless some protection is given the ends of wood it will begin to crack. The cracking or checking as stated above is the result of the end drying out more rapidly than the inside and the best cure for it is to dry slowly or dry your stock standing on the ends so that the sap of its own weight will work its way down to the lower end. Suppose you try the experiment of standing the blocks on end in a cool shady place protected from sun and wind and see how it works.

J. CROW TAYLOR.

Picture Molding

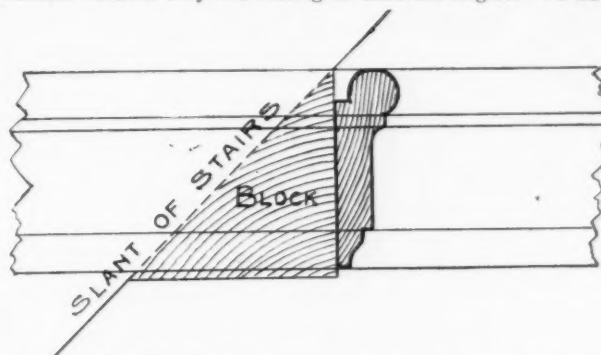
To the Editor:

Waterville, Me.

Will you please explain through the magazine, the right way to put up picture molding, where there is a stair carriage running up through the room. I can intersect it on the wall where it strikes the carriage, but can it be intersected on the out corner and how? Please show by drawings.

A. W. HANEY.

Answer: In places of this kind, the molding pieces will not member because they are resting at different angles. To have



them member, it would be necessary to work a special mold to go under the slanting part of the stairs. Of course, this piece would not be of any use further than to have a continuous mold running around the room. The only way the regular mold could be made to member would be to block out as shown in the accompanying diagram. The back of the molds in that case set perpendicular and the angles would be the regular 45 degree miter.

A. W. WOODS.

PRACTICAL TRADE APPLIANCES

A Unique Device

As an instance of the manner in which minor problems have come up in the work, and the way in which they have been



most effectively solved, your attention is called to the illustration, which shows a fire shutter hinge device, and the manner in which it is placed in a wall.

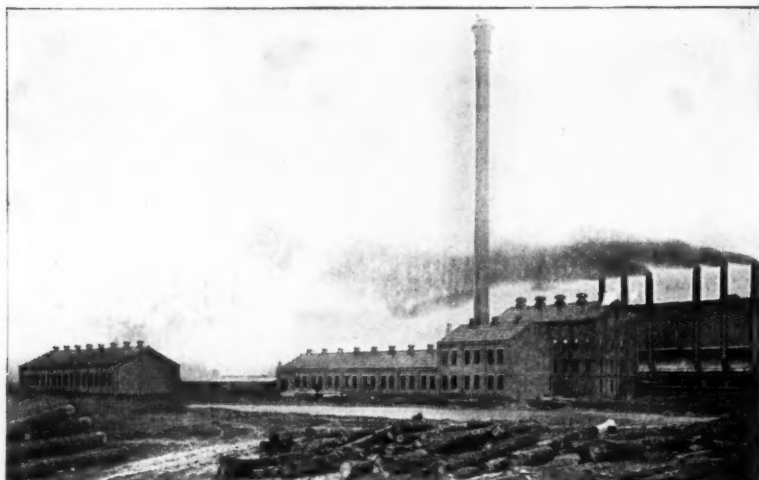
Do you happen to know that there is not, in the entire United States, another such device known to the trade? Until this very simple appliance was constructed, it was absolutely necessary for any one who wanted an extra strong hinge to have it made to order, or to choose from a stock of hand-

made hinges. These were relatively expensive and almost never satisfactory after they had been used for a short time. They were made by blacksmiths who did not care particularly for the work, because they demanded so much time that the purchaser invariably felt that he was paying an outside price for an indifferent article at best.

Just the opposite of this is true of Zimmerman's Anti-Sag Strap Hinge. It is an old reliable article, made in quantities by experts; and for this reason it may be obtained at very reasonable rates. It is handled by Harry Zimmerman & Co., Fremont, Ohio.

Jointers

The "Defiance" jointers are built from entirely new designed patterns, and are made in four sizes, 8, 12, 16 and 20 inch. The frames are made in column form of a good substantial construction, with a large floor space, the base being cut away from the side for operation to prevent accidents when the work is alongside of the plane. The heads are made of a high grade, hand forged, crucible steel, milled perfectly true on four sides, two sides being slotted for molding, dadoing and rabbetting, and may be used in connection with the regular cutter knives. The bearings in the cylinder shaft are



Ohio Salt Company uses 25 glass top Burt Ventilators on their new factory.

Burt Ventilators are made with an adjustable sliding sleeve damper, which is a very important feature as it is possible to open the ventilator to any degree by simple adjustment of the damper, which is held firmly by a special attachment, thus requires no attention and is not affected by air currents and it is not necessary to tie the rope or chain to a nail, hook or post as in the case of the common flat damper. The air shaft is free and unobstructed; thus the pulling power is greater in the Burt than other makes.

The glass tops make them a combination skylight and ventilator from which the light is never shut out, even when the damper is closed. In other makes when the damper is closed the light is instantly shut off, and at just the time when the skylight feature is needed.

Send for our new 92-page catalog giving fine illustrations of mills, shops, factories and residences where Burt Ventilators are in successful use.

The Burt Mfg. Co., 500 Main Street, Akron, O.

Largest manufacturers of oil filters and exhaust heads in the world.

Geo. W. Reed & Company, Montreal, Sole Manufacturers of "Burt" Ventilators for Canada.

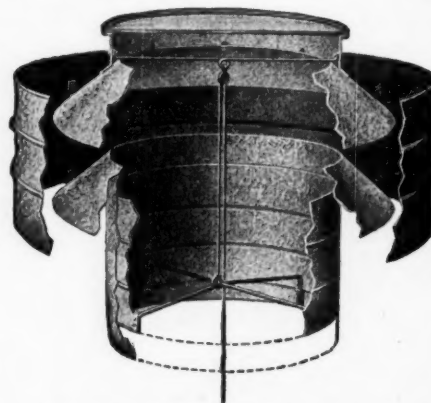
Fresh Air in Spite of the Fumes

You can imagine what the atmosphere in a factory would be without provision for ventilation. Ordinary methods of ventilation are not effective in such places; consequently it is necessary to provide for ventilation by the very best appliances which can be obtained.

That is why the Ohio Salt Company, of Rittman, Ohio, use 25 large glass top

Burt Ventilators

on their factory. Look at them in the picture. The Ohio Salt Company's ventilating troubles are over for they have fresh air at all times in spite of the fumes.



Notice Adjustable Sliding Sleeve Damper. Patented.

NATIONAL
MFG. CO.NATIONAL
MFG. CO.

Contractors Say

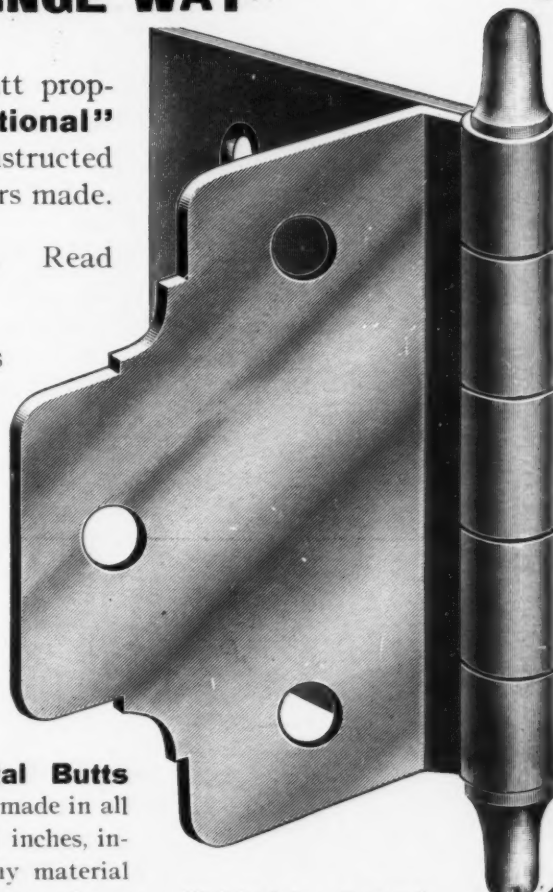
THE "NATIONAL" WAY

"IS THE ONLY HINGE WAY"

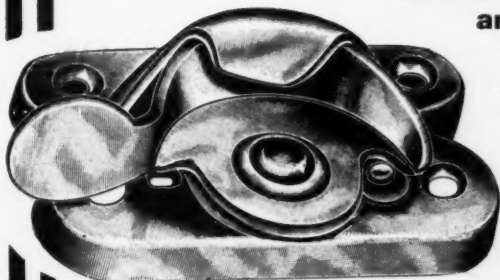
When talking about the hinge and butt proposition. There are reasons for it. **"National" Butts and Hinges** are designed and constructed on lines that mean superiority over any others made.

Not hearsay, but facts—proven facts. Read about the advantages they possess.

They are labor-saving;—contractors say they save one-half the time required to hang the doors. Extreme rigidity;—the false tip has slot for screw driver, making it easy to remove pin. Great durability;—screws in the ornamental leaf of our butts are subjected to a shearing strain—an obvious advantage.



Artistic Designs

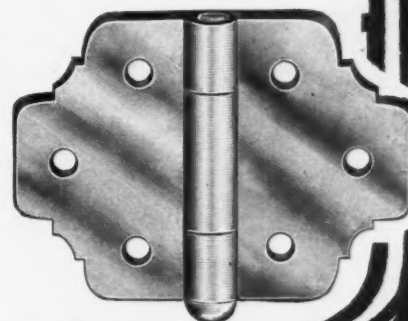


"National" Ornamental Butts and Hinges are made in all sizes from $\frac{1}{2}$ to $4\frac{1}{2}$ inches, inclusive, and in any material desired—steel, brass or bronze. Finished in all standard finishes. Exclusive artistic designs that look well on any door.

Standard of Perfection

The radical innovation that **"National" Ornamental Butts and Hinges** have proved to be, their real practicability and the simple principle on which they are made, have caused them to be regarded as the standard of perfection in butt construction. Wide-awake contractors and builders are everywhere adopting them, and the thousands already in use stand as examples of genuine satisfaction.

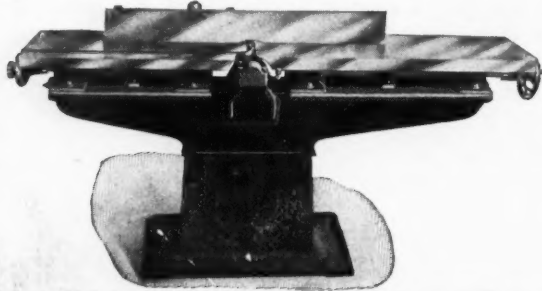
Send for booklet **"Ornamental Designs."** It gives carpenters and contractors a few pointers about good butts. You might mention your dealer's name when writing.



NATIONAL MFG. CO. STERLING ILLINOIS

unusually large, and have patent reservoirs to keep the journals constantly flooded with oil.

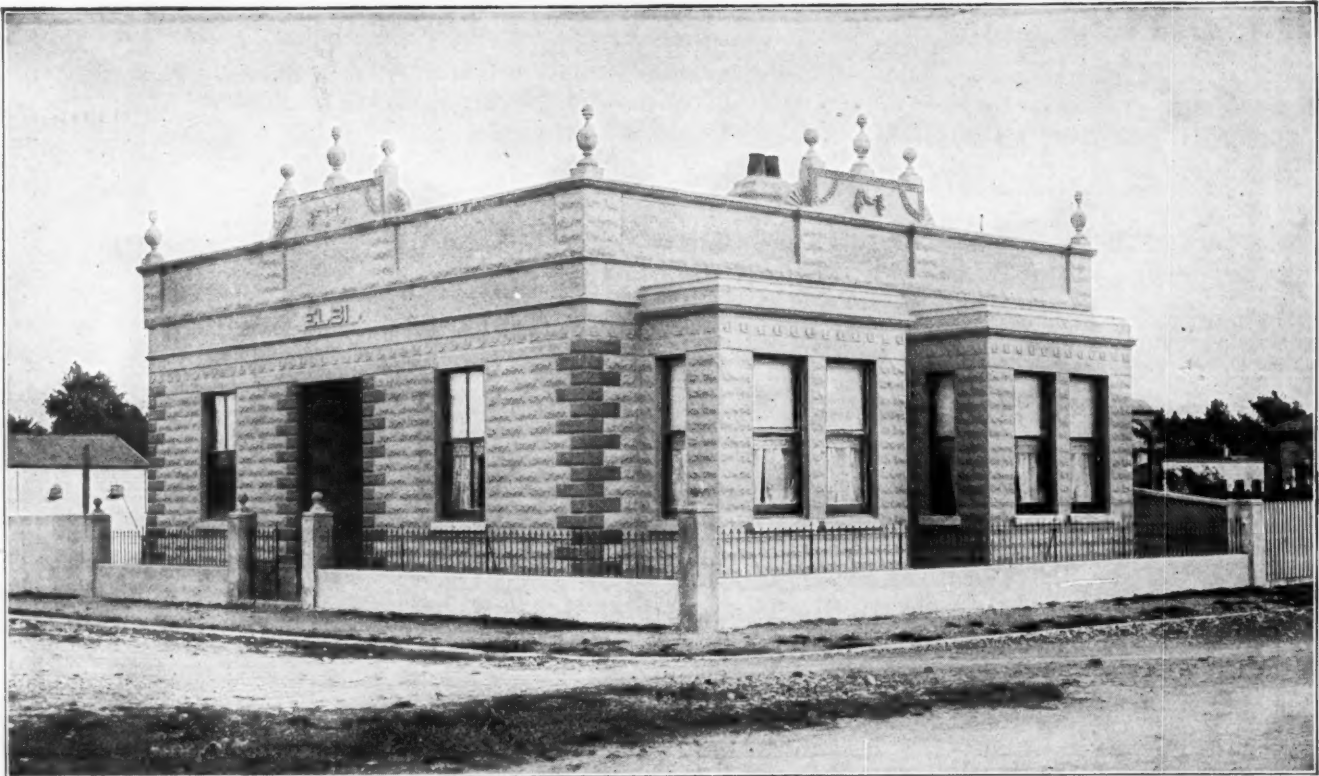
The tables are planed perfectly true, and are made extra long, the extreme length from out to out being 7 feet 3 inches. Both tables are mounted on incline and have independent adjustments for the different depths of cuts. This movement is accomplished by means of a convenient hand wheel and screw, the only reliable method of securing accuracy and steadiness. Each of these wheels is fitted with a small lock wheel to prevent tables from getting out of line while the machines are running at a high speed.



A beautiful book, showing these jointers, as well as other machines which they manufacture, will be mailed upon request, by the Sidney Tool Co., Sidney, Ohio, whose ad. appears in this journal.

Blocks in New Zea'and

The accompanying photograph has been furnished us by the Miracle Pressed Stone Company of Minneapolis, and shows the first house erected in New Zealand of Miracle double air space blocks. It is a six room cottage with all modern im-



provements and is located at Lower Hutt, Wellington, New Zealand. Considerable originality is shown in its construction and it is altogether a very good example of what can be done with a simple outfit by a man who will give attention to details and make an effort to excel.

Grille Catalogue

Architects have long appreciated the value to themselves

of the carefully prepared catalogues gotten up by firms manufacturing building materials of various kinds. The contractor also has come to realize their value for him. There are some lines, of course, in which the illustrated catalogue is more important and serviceable than in others. Grilles, columns and consoles comprise one of these. This class of work is in demand if properly illustrated and displayed to the customer. The goods are then ordered from the catalogue.

The North Western Grille Works, 1452 Milwaukee Ave., Chicago, have just issued a fine new illustrated book which every architect and builder should have.

Ornamental Hardware

The National Manufacturing Co., Sterling, Illinois, who make a fine line of builders' hardware specialties, after considerable time spent in experimenting and designing, conceived the idea several years ago of manufacturing an ornamental half-surface door butt hinge.

The great and increasing favor with which these ornamental butts and hinges have been received among the carpenters, contractors, dealers and architects, has fully demonstrated the fact that they are practical; and the increasing demand indicates a more general use the coming season. They are appropriate for use on either private dwellings or public buildings. They can be had in steel, brass, or bronze, in all standard finishes. Any special finish can be matched or supplied on short notice, as this company has in operation one of the best equipped plating plants in the country, superintended by an expert plater with an able corps of assistants.

The following points of superiority are claimed for these

goods, as compared with the old-style or common butts:

First—Wherever these butts and hinges have been used carpenters and contractors have found that they save one-half the time required to hang the doors.

Second—The pin extends through all the knuckles, making the butts very rigid. In the ball-tip butts the pin extends only to the lowest knuckle, weakening the butt just that much. The pin is easily removed from the ornamental butts,

LUMBER AND BUILDING MATERIAL

Special Offer To Contractors And Builders

Buy From Us At
WRECKING PRICES

CHICAGO HOUSE WRECKING CO.

An Opportunity To Save
25 TO 50 PER CENT

IMPORTANT! Send Us Your Lumber and Building List for Our Estimate

Brand New Lumber for Sale

The Chicago House Wrecking Company is the largest concern on earth devoted to the sale of Building Material and General Supplies direct to the Carpenter and the Contractor. By dealing with us you are purchasing at first hands. This company was organized in 1893 for the purpose of dismantling the Columbian Exposition at Chicago. Since that time we have successfully purchased and dismantled every Exposition of any note. We have from this one source alone sold over One Hundred and Sixty-five Million feet of lumber. It was from this natural cause that we engaged in the lumber business. We found that it was impossible for us to successfully take care of the thousands of our customers and supply them with lumber from this one source. As a consequence we purchased outright various saw mills and also bought at forced sales millions of feet of high grade, brand new lumber. In addition we have for sale a complete stock of mill work, plumbing material, heating apparatus, structural iron, hardware and everything that enters into the construction of a building of any kind or for any purpose. Our fame is National. No other firm can make the sweeping statement that we do: That you can come into our establishment and buy everything needed both to build the building and completely equip it. We invite inspection of our stock.

Fifty Million Feet In Stock

At the present time, we have for quick sale over fifty million feet of brand new, first class, high grade lumber of every kind. We can furnish you lumber for building houses, churches, barns, stores and factories. And it is the best grade of lumber. Just as good lumber as is to be found anywhere on earth. We are making special prices to those who buy at once. Never in years has lumber been offered at such prices as we offer it. The best proof of this is to allow us to make a bid on your estimates. Just make a complete list of everything you need for any particular job you may have on hand and it will surprise you what we can do in the way of prices. Nothing like it was ever heard of. The best and most convincing proof of our prices is the fact that during the past sixty days while others have been bewailing poor business, we have steadily increased and have sold vast quantities of lumber and building material. Much more in fact than we have ever sold in any corresponding period in the history of this business. You will save in dealing with us. Our broad and binding guarantee protects you absolutely. You will get from us just the material that you purchase. It stands to reason that our goods must be right. How else could our business have attained its wonderful commercial proportions? All we ask is an opportunity to convince you. Or, better yet, come on to Chicago, visit our yards, see our goods. We will show you it is all that we represent. Then and there we will make you a price so low that it is bound to secure your business. You can't overlook such a chance as we offer. It is the opportunity of a lifetime. You will never again be able to purchase lumber and building material at such low prices as we offer today. Write for particulars.

Satisfaction Guaranteed.

We guarantee absolute satisfaction. We mean every word of that. We want your business only on a square business-like basis. We will deal honestly and fairly with you. If you buy any material not fully up to our description, we will either refund the purchase price or exchange it for correct material. This company has a capital stock and surplus of over One Million Dollars. We refer you to any Bank or Banker anywhere. Write to any commercial agency or ask us for names of people who have bought their lumber from us recently and we will send you copies of hundreds of letters received by us daily. Our best advertisement is the vast number of satisfied customers.

Write Today For Our Low Lumber Prices

Ask us to send you our latest lumber price list. It will be sent you so clearly and plainly that you can tell at a glance just what our quotations are. The grades are clearly defined. No attempt to humbug you on quality. We want to furnish you just what you buy. We want you to be able to say you "bought your lumber and building material from us and got value for your investment." That's the way we built up this business. That's the way we intend to continue to build. We require your patronage and good will. Out-line your needs and we will make you a reply so convincing and clear that you can't help but give us the business.

Everything Used In Building Sold At A Big Reduction

BARGAINS IN DOORS

5000 4-panel Doors 1 3/8 in. thick, size 2 ft. 6 in. x 6 ft. 6 in. 95c each. Size 2 ft. 8 in. x 6 ft. 8 in. \$1.05 each. We carry a complete stock of brand new doors of all sizes and in every specification. Handsome high grade front and vestibule Doors, strictly "A" quality; and the best of their respective kind. They are set with bevel plate glass, or we can furnish them glazed with fancy face design, double strength glass. They range in price from \$3.75 to \$20.00. High grade Front Doors, brand new, strictly "A" quality White Pine, glazed with sand blast glass size 2 ft. 6 in. x 6 ft. 6 in. \$3.15. Other sizes at proportionate prices. California Redwood Sash Doors strictly first class glazed with clear glass, 2 ft. 6 in. x 6 ft. 6 in. \$2.50. 2 ft. 8 in. x 6 ft. 8 in. \$2.60. Double Sash Doors for stores or vestibule strictly "A" quality White Pine, 1 3/4 in. thick, glazed, size 5 ft. x 7 ft. with double strength glass \$9.00. All sizes in stock up to 6 ft. x 8 ft. Brand new O. G. Doors with panels raised both sides, size 2 ft. 6 in. x 6 ft. 6 in., \$2.07. Size 3 ft. x 7 ft. 6 in. \$3.00. A complete stock of all sizes. Four Panel O. G. Doors White Pine size 2 ft. 6 ft. \$1.22. 10,000 Used Doors from various wrecking operations. In this lot we have doors taken from small cottages and buildings ranging from 2 ft. x 4 ft. up to 6 ft. x 8 ft. in good condition at 40c. Also fancy glazed Front Doors for residences ranging in various sizes at \$1.50 and up. One lot of large barn doors used at the St. Louis Exposition, fancy designs, strongly built, each \$2.00. Write at once for full particulars.

HIGH GRADE NEW MILL WORK

We are in better shape to quote low prices than any other concern on earth. We do not buy our goods in the regular way. We purchase at Sheriffs' Sales, Receivers' Sales and Manufacturers' Sales. We can furnish you mill work of every kind and character. We can furnish everything needed in mill work, both regular and special. Send us memorandum of your requirements. Let us make you an estimate. Note our low quotations: Colonial Porch Columns strictly No. 1 Poplar, trimmed, sizes, 6 in. x 6 in. 4 ft. long at \$1.25; 8 in. x 8 in. 4 ft. long at \$1.45. 6 in. x 6 in. 8 ft. long at \$1.70. 8 in. x 8 in. 10 ft. long at \$2.70. Fancy Porch Columns sizes, 4 in. x 4 in., 8 ft. long at 65c; 5 in. x 5 in., 9 ft. long at \$1.15. 6 in. x 6 in., 10 ft. long at \$1.30. Fancy Porch Newels 4 in. x 4 in., 4 ft. long at 35c. Stair Newels at \$3.15 and up. Angle Newels at \$1.50. Fancy Stair Balusters at 8c. Porch Balusters at 5c. Corner Beads at 10c. Base Angles per 100 ft. \$1.90. Porch Spindles at 2c. Porch Brackets at 7c. Fancy Face Brackets at 25c. Adjustable Cable Ornaments at \$1.25. Corner Blocks 2 1/4 in. Head Blocks at 4 1/2 in. Base Blocks at 4 1/4 in. Top Rail, per 100 ft. \$2.30. Bottom Rail per 100 ft. \$2.30. Quarter Round per 100 ft. 30c. In fact we can furnish at exceedingly low prices everything you can possibly require in mill work. Get our prices on Flooring, Shingles, Ceiling, etc.

BARGAINS IN WINDOWS

5000 Windows from various wrecking operations at prices ranging from 25c up. In this lot are a number of windows that are very fancy that will be sold at half the price of new ones. Fancy Front Windows brand new, high grade 1 3/4 in. check rail, they are up-to-date in design, bottom sash glazed with double strength clear glass, top sash with fancy ornamentations, size 3 ft. 8 in. x 5 ft. 2 in. \$1.90. 4 ft. x 5 ft. 10 in. \$6.35. Cottage Front Windows size 3 ft. 8 in. x 4 ft. 2 in., \$3.52. 4 ft. x 5 ft. 2 in., \$4.20. 4 ft. 6 in. x 6 ft. 2 in., \$6.69. Two light check rail Windows size 1 ft. 8 in. x 3 ft. 2 in., 63c. 1 ft. 11 in. x 4 ft. 6 in., 74c. 2 ft. 1 in. x 3 ft. 10 in., 81c. 2 ft. 2 1/2 in. x 4 ft. 10 in., 95c. Four light check rail Windows size 2 ft. 1 in. x 3 ft. 10 in., 70c. 2 ft. 5 in. x 4 ft. 6 in., 95c. Eight light check rail Windows size 2 ft. x 4 ft. 6 in., 77c. Cellar Sash two lights, size 2 ft. 1 in. x 16 in., 38c. 2 ft. 9 in. x 20 in., 62c. 500 Storm Sash, first class, two light brand new at 74c. 255 Fancy Windows from the St. Louis Exposition, each 60c. 1000 second-hand Barn Sash, each 52c. 5000 Used Sash from the St. Louis Exposition glazed with 1/8 in. ribbed factory glass in all sizes which we will sell at per sq. ft. 6c. All kinds of Window Glass, Plate Glass, Ribbed Sky-light Glass and everything required in Window Glass and Sash.

DON'T BUY YOUR BUILDING MATERIAL UNTIL YOU WRITE FOR OUR ESTIMATE

Rubberized Galvo Roofing

The greatest Roofing value on earth. No higher grade manufactured. Unexcelled as to quality, wear and economy. Easy to put on. Requires no previous experience. Can be put on over shingles without removing them. Does not require a coating after it is in the roof. Weather-proof and fire-proof. Contains no coal tar, residuum or injurious compositions. This roofing is bought direct from manufacturers and is usually sold at double our price. It is guaranteed to give lasting service. Rubberized Galvo Roofing is slate color, tough, leather-like material made of a combination of wool felt and highest grade of natural, pure asphalt. Makes buildings warmer in winter and cooler in summer. Not affected by acids or gases. Has rubbery surface and on this account we call it Rubberized Galvo Roofing. It toughens and hardens with age. We furnish with each order sufficient cement to make the laps and large head nails to put it on with. It is appropriate for any kind of building. 1 ply per sq., \$1.25. 2 ply per sq., \$1.40. 3 ply per sq., \$1.75. These prices are per sq. of 108 sq. ft. and are P. O. B. Cars, Chicago. Also have in stock 1000 sq. ft. of pure asphalt rock surfaced roofing bought by us at manufacturers' sale. Put up two to five lengths to a roll and each roll contains 108 sq. ft. Price per 108 sq. ft. including nails and caps, \$1.50. Red, Rosinized Building Paper per roll 500 sq. ft. 45c. Slaters Roofing Felt, per roll of 500 sq. ft. 75c. Write for free samples.

FREE 500-PAGE CATALOG NO. 742

We urge you to write at once for this bargain book. It is just out and ready to be sent on request. It contains a full record of our wonderful stock of Building Bargains. It also shows what we have on hand from our mammoth wrecking operations. It contains a record of thousands of bargains secured by us at Sheriffs', Receivers' and other sales. It is a book that must be in your hands if you want to be posted. It also contains a complete account of our purchases of Household Goods from Sheriffs' and Receivers' Sales. Cut out the Coupon in the corner of this advertisement and mail it to us and we will immediately send you this book. **CHICAGO HOUSE WRECKING CO.** 35th and Iron Sts. Chicago, Ill.

PLUMBING AND HEATING

\$1.25 for a White Enamel Kitchen Sink. 3,000 hand made cast iron, flat rim, white porcelain enameled, brand new kitchen sinks 16 in. wide and 24 in. long, with nickel plated strainer and collar for connection, all ready to install. Kitchen sinks with backs, made in one piece prices ranging from \$7 to \$15.

\$3.50 for a White Enamel Lavatory. In assorted styles and shapes for straight wall or corner of room. Our price is for lavatory slab, including waste plug, nickel plated overflow and brackets. Other styles including supply pipes, basin cocks and all nickel plated appliances, ranging in price to \$20.00. We carry in stock at all times everything needed for installing plumbing for a building of any kind. No other concern on earth has such an enormous quantity of brand new material for sale. Send today for our plumbing catalog.

White Enameled Bath Tub

\$9.00 buys a White Enameled Bath Tub. 600 "New Style" bath tubs, finest galvanized steel with the enamel baked on the inside, nicely finished on the outside, heavy wood rim, 5 ft. long. **Bath Room Outfits \$25.** With steel enameled tub, vitreous earthen closet bowl, polished, hard-wood seat and tank, complete with nickel trimmings ready to install. Other complete outfits from \$35.00 to \$150.00.

Plumbing Material of all kinds at prices that do not represent cost of production. We buy at Sheriffs' and Receivers' Sales only; that's why we can undersell all. Send today for our low estimates on plumbing material.

FREE CATALOG COUPON

Fill Out, Cut Out, And Mail.

Name.....
Town.....
County..... State.....
Shall we send 500-Page Catalog.....
Do you want our Plan book.....
What items in this ad most interest you?
I am a reader of American Carpenter and Builder
Address Chicago House Wrecking Co.



Better Than Mixing Your Own Wood Stains

MORE economical, too—is the use of Johnson's—ready prepared—Wood Dyes.

We don't need to tell you that *labor* is expensive, *mistakes* are expensive, a stain that's a bit off-color is expensive—mighty expensive in the long run.

As a thinking painter or contractor, you know that competition is keener today than it ever was, and that solid, lasting success is built only on the *right results*.

You cannot afford to trust to rule-of-thumb mixing which squanders yours or your workmen's time and *may* or *may not* produce the desired finish.

Give a workman Johnson's Wood Dyes and he will do an hour's work in an hour, the finish will be right, true to the natural beauty of the wood, and you and your customer will both be satisfied.

JOHNSON'S Wood Dyes

Actually Dye the Wood

Within the past two years it has cost us over \$50,000 to insure your perfect satisfaction with Johnson's Wood Dyes. We have spent that money in research and experiment. We *know* regarding wood-finishing preparations what the "other fellows" have not yet begun to learn.

We import the colors used in Johnson's Wood Dyes—because we cannot find their equal in this country. Johnson's Wood Dyes alone make possible that rich, luxurious effect.

You can't get this rich, luxurious effect with the stains you mix or the so-called "stains" on the market. Water and spirit "stains" raise the grain of the wood.

Oil stains do not color the wood deeply and when used on oak, the color changes because of chemical action.

Varnish "stains" are not stains at all. They are simply surface coverings that often crack and peel and always give the cheap, painty, shiny effect.

Johnson's Wood Dyes are *Dyes*. They penetrate the wood; do not raise the grain; thus accentuate the high lights and develop all that is beautiful in the wood.

Johnson's Dyes are Prepared in All Shades as Follows:

No. 131, Brown Weathered Oak	No. 121, Moss Green	No. 110, Bog Oak
" 172, Flemish Oak	" 178, Brown Flemish Oak	" 128, Light Mahogany
" 126, Light Oak	" 129, Dark Mahogany	" 125, Mission Oak
" 123, Dark Oak	" 140, Manilla Oak	" 130, Weathered Oak

Johnson's Wood Dye, any desired Shade, is sold by the best paint dealers. Insist on getting the genuine—don't take a substitute.

Half-Pint Cans - \$.30	Quart Cans - \$.85
Pint Cans - .50	Gallon Cans - 3.00

Free Trial Offer:

We will send you absolutely free of charge—two cans of Johnson's Wood Dyes, your choice of shades, one can of Johnson's *Electric Solvo* for removing paint and varnish, and our handsome 48-page Text Book on "The Proper Treatment for Floors, Wood-work and Furniture." Take advantage of our offer now. Tear off the coupon, sign and mail to us today.

S. C. Johnson & Son

"The Wood Finishing Authorities"

Racine - - Wis.



The Best Paint and Varnish Remover

IT'S one thing to remove paint and varnish from wood.

It's quite another thing to do it well—an absolutely clean job.

The surface left *just right* for re-painting or re-varnishing.

There's just *one* remover that's certain to accomplish *just the right* results on every kind of surface—and that's Johnson's Electric Solvo.

And it is "electric"—lightninglike—in the way it does its work.

It is unequalled for softening all old finish whether on wood, glass or metal, so that it may easily be removed with a painter's ordinary putty knife, leaving the surface bare and clean, ready for the new finish.

It is entirely free from all offensive odor. It will not injure the hands or the finest fabrics.

It will not soften glue in joints. Neither will it raise the grain of the wood.

It is semi-paste in form, and for this reason, you can use it successfully on all upright surfaces.



JOHNSON'S Electric Solvo

For Softening Old Finish So That It May Be Easily Removed

It is a well known fact that old furniture, woodwork or floors can *not* be satisfactorily refinished without first removing the old finish.

Johnson's Electric Solvo is absolutely *unlike* any other paint and varnish remover. No matter what unsatisfactory experiences you may have had with other removers—the paint not drying properly over the new finish, etc.—*don't* set this product down as "another of the same sort."

Johnson's Electric Solvo *won't*—it *can't*—injure the new finish.

We'll tell you why:

All the paint and varnish removers that are worth anything at all are made, through license, under a certain patent.

The patent calls for a large percentage of paraffin and it is the quantity of pure paraffin, used in other paint and varnish removers that prevents your new finish from drying properly.

Now in Johnson's Electric Solvo, we use a special secret combination which contains only about one-fourth of the specified amount of paraffin.

As a consequence, Johnson's Electric Solvo gives the very best results in removing the old finish but does not leave an excess of paraffin to spoil the new finish.

Now you know why Johnson's Electric Solvo is the only safe paint and varnish remover for you to buy—and it costs no more than the unsafe kind.

The proof of all this is in our

Free Trial Offer

A generous sample of Johnson's Electric Solvo, along with two sample cans of Johnson's Wood Dyes (your choice of colors). Fill out the accompanying coupon, clip it and mail it to us today. Address

S. C. Johnson & Son

"The Wood Finishing Authorities"

Racine - - Wis.

**FREE
Coupon
ACB-9**

**S. C. Johnson
& Son
Racine, Wis.**

Gentlemen:—My paint dealer's name is

His address is.....

for which please send me FREE, prepaid, two (2) samples of Johnson's Wood Dye shades, and one (1) sample of Johnson's Electric Solvo, and copy of your new 25c book, "The Proper Treatment for Floors, Woodwork and Furniture." Edition..... all FREE as per your offer.

My name is.....

My address is.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Look for this trade mark etched
on every saw.

**Simonds Saws
are the Best—**

**and They ARE
the Best**



A fair trial by any fair minded carpenter. That's all that is necessary to prove our claim of high quality in Simonds Saws. You want a saw that has the right temper, holds its cutting edge, hangs right, saws true and has a well shaped handle correctly set on the blade. These are the points to be considered when you buy a hand saw. Points essential to a good saw. Points that will be found in Simonds Saws.

Made of Simonds Steel

Simonds Steel is made in a Simonds Steel mill exclusively for saws. We make any size or point, straight or skew back, hand, panel, or rip saw also compass keyhole and back saws. Tell us what saw you want and we will send address of Hardware Dealer near you handling Simonds Saws and will also send you a free copy of Simonds Carpenter Guide.

SIMONDS MFG. CO.
FITCHBURG, MASS.

Chicago New York New Orleans Montreal
San Francisco Portland Seattle London

while it is frequently impossible to remove it from the ball tip butts without springing them.

Third—The screws in the ornamental butts will stand a much greater weight than the screws in the same size common butts. In the ornamental butts the screws are subjected to a shearing strain, while the screws in the common butts must withstand a drawing strain. The advantage is obvious. With the first order for ornamental butts and hinges a handsome mounted model is furnished free of charge.

India Oil Stones

The illustration shown herewith is of a window display of India oil stones arranged for Springfield Hardware Company, Springfield, Ohio, by a representative of the Pike Manufacturing Company, who are sole selling agents for the India oil stone line. It is one of many displays this firm is now making all over the country. In fact, the firm has several men constantly on the road who make these displays a specialty. Their plan of procedure is to arrange for a week's display with a firm, who requests their services, occupying prominent show windows in the hardware dealer's store. The display is well advertised with a view to informing all mechanics and others interested in the use of sharpening stones,



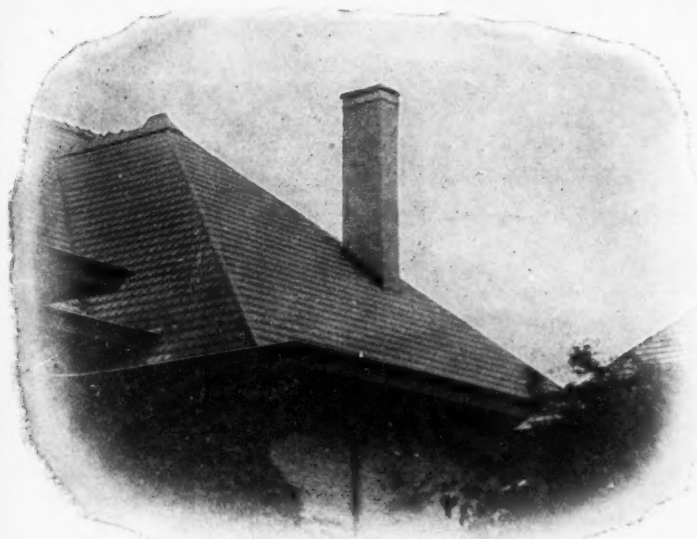
so that large numbers of those interested are always on hand to see the many different shapes and sizes of this remarkable stone, and to witness the demonstration of its sharpening qualities, and an explanation of the work which each particular stone is intended to do. As the India oil stone is especially adapted for carpenter's work, we recommend that any carpenter who has opportunity make it a point to witness one of these demonstrations, and learn more about this stone, which is called the hardest, fastest cutting and most durable of oil stones. An advertisement of the India oil stone line is now running in the AMERICAN CARPENTER AND BUILDER, see third cover page.

The Weber Exhibit

To the readers of this paper the exhibit at the Wisconsin state fair of the Weber Manufacturing Company, 670 71st avenue, West Allis, Wis., will be of unusual interest. Mr. John F. Weber, president of this concern, and the inventor of the Weber Double Acting Floor Scraper, will himself be



THE PERMANENT ROOF



What Constitutes Permanent Roofing?

That's the question. Coming right down to plain facts—eliminating the usual stereotyped claims of roofing superiority—what has been **proven** to withstand climatic changes and live through several decades?

Those Who Know Say "Tin Roofing, Unquestionably"

From any point, durability or economy, tin undoubtedly surpasses shingles, "compositions," "felt," "tar paper," and all the other "makeshift," and generally worthless, coverings that flood the market. There's no doubt about it.



This cut shows Metal Slates in connection with Roll Ridge-Coping, Plain Hip-Covering, and Valley.

Cortright Metal Roofing

Twenty Years of Manufacturing

Has given us a proficiency in manufacturing tin roofing and developed a scientific basis for our claim of a permanent roof covering.

Remember, in spite of other manufacturers' claims, we are the only concern that can say—and say it truthfully—that "Cortright" roofing will positively **outlast the building**. No cracking, no splitting, no leaking. Permanency through and through.

"Cortright" Metal Roofing is made from highest quality tin, on advanced mechanical principles. It is almost as radically different from plain tin roofing as it is from shingles. The method of manufacturing is ours—no others use it.

Contractors are using it almost without exception. They simply realize that one well laid roof is a standing advertisement, and other contracts will follow.

In our catalog is explained the difference between present-day roofing and the old styles. Contractors interested in the matter can obtain it free for the asking.



Group of Victoria Shingles, showing method of laying.

Cortright Metal Roofing Co.

PHILADELPHIA and CHICAGO

present at the fair, from the time it starts, on September 7th, right up to its close, on September 11th. He will be prepared to demonstrate personally the many advantages of the Weber Double Acting Floor Scraper, with all its several attachments for different purposes. He will also show his machine at work on all various kinds of hardwood.

It might not be amiss to mention that Mr. Weber has absolute confidence in the merits of his scraper. To demonstrate that he has the full courage of his convictions, he will send this scraper on free trial to interested parties.

It will pay any contractor, carpenter or builder who is interested in floor scrapers to visit this exhibit regardless of whether they now have a scraper or not. The booklets that Mr. Weber will give out at his exhibit explain the machine very thoroughly and the practical demonstration that he will give of his scraper will be well worth seeing.

The exhibit will be between the J. I. Case Plow Company building and the display of the Interior Woodwork Company. Those who are interested should make it a point to call and have Mr. Weber demonstrate, right there on the spot, every claim that he makes for his scraper.

Petz Construction

All plate glass insurance companies indorse this down-to-date system of store front construction because they understand it is the best and safest of any made.

By its use all big unsightly pillars and posts are dispensed with. Requires little trouble to install and never requires attention.

By the Petz practical method glass can be set in place FROM THE OUTSIDE. No necessity to disturb the whole of the window display on purpose to replace a broken light.

The construction is sensible all through. Inner core is reinforced with a heavy steel bar extending entire length, turned over at each end so that it can be securely screwed to frame work. Outer core is made of cypress with a heavy metal covering drawn over and clinched at both sides by a special process.

Variety of finishes is large and pleasing. Copper, brass, bronze, German silver, nickel-plated, oxidized copper, antique brass and gun-metal finishes are some that are being installed every day.

The neat principle makes for a compact looking store front. Progressive merchants are every day installing Petz construction in place of unsatisfactory systems. It admits more light to the window and presents altogether a more attractive appearance than anything previously known.

On durability it has everything beaten as specifications show. There is absolutely nothing about it to cause trouble or wear out.

Briefly it has stood the test of practical usage and is the general favorite of hundreds of merchants, contractors and architects. Letters of endorsement prove that.

Let them send you literature including their newest booklet "Listen to Petz." Tells the whole story of modern store front construction. A postal today is sufficient.

Detroit Show Case Co., 476-490 W. Fort St., Detroit, Mich.

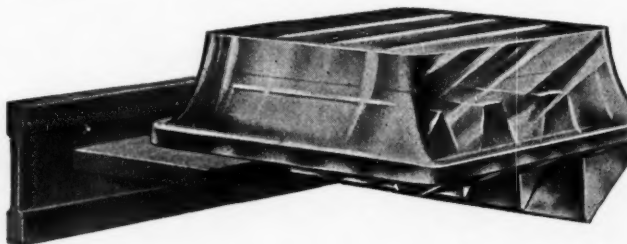
Prismatic Glass

There are several makes of prisms and prismatic glass on the market, none of which, however, in strong scientific construction and in efficiency as a light diffuser into dark places, is equal to the 3-Way Prisms. One omits the lenses altogether, leaving the outside of the glass a plain surface and relying entirely upon the prisms on the inside for the diffusion of light. This is a very inferior method, for not only is one-half of the diffusing power of the glass wasted, but the light which strikes on the outside surface of the glass, at an angle, is reflected as in a mirror, and lost entirely.

To overcome the defects of previous makes, an exhaustive

series of experiments was made, resulting at last in a greatly improved glass called the 3-Way Prism.

A lens was made and placed at right angles to the prisms. This causes the light to break up at a point where the lens and prisms unite, which causes a greater diffusion of light.



It often occurs that the window to be lighted opens on a court or alley, where the light comes as much from the side as from above. The 3-Way Prisms only can utilize this light.

Any good prism will diffuse a certain amount of light, but these patented 3-Way Prisms increase the light-giving qualities 25 to 30 per cent; the lenticular surfaces gather the side lights and project the same into the interior to the right and left in addition to the main body of light projected by direct surface of prism, thereby diffusing a large amount of the shadows that are usually caused by prism glass when obstructions are in the interior, such as tables, posts, desks, etc.

This 3-Way Prism idea has been successfully applied by the manufacturers, The American 3-Way Prism Company, Philadelphia, Pa., to the construction of 3-Way prismatic wire glass and vault lights, prism glass pressed in tiles 5 inches square, prism glass pressed in sheets, 3-Way prisms, lens, etc.

Write today for full information, mentioning the AMERICAN CARPENTER AND BUILDER.

10 Year Roofing Guarantee

In the advertising columns of this paper the United Roofing and Manufacturing Company are offering to every purchaser of 3-ply Congo Roofing a National Surety Company guarantee bond, which covers a period of 10 years. This company is one of the largest surety companies in the world (capital and assets of about \$2,000,000), and when they back a proposition there must be a great deal in it or they would not have risked their reputation on something about which there could be any question.

The Congo people are desirous of making this roofing the most used in the world, and with their usual foresight hit upon this excellent plan of giving the buyer satisfaction as well as increasing their sales. The bond is a plain statement of what they can and will do, and offers such protection that no prospective buyer can afford to overlook. This bond means protection to you.

It isn't necessary to buy the roofing to learn the contents of the bond—which is another pleasant feature. By writing to the United Roofing & Manufacturing Co., Philadelphia, Pa., they will be glad to send you information regarding same and sample free.

Automatic Sash Holder

A little device is being put out by the Automatic Sash Holder Co., 277 Broadway, New York, which is indeed a boon to both builders and owners. It is a sash holder which dispenses with sash-weights, cords, pulleys and balances, together with their attendant deficiencies and annoyances. It acts automatically and holds in any position required, both lower and upper sashes of window.

With it there are no weights to catch, no cords to snarl and break, no pulleys to bind, no balances to fail to work. It obviates the jamming and annoyance which results from

THE TOUCH OF TIME **HAS TESTED** **VULCANITE** **READY ROOFING**

Father Time has tested Vulcanite Ready-Roofing—tested it thoroughly And sixty years of success has proved Vulcanite the 'Roofing of Ultimate Saving'



A natural Mineral Rubber, Vulcanite is mined the same as coal and costs us \$100.00 per ton. It's the most expensive mineral used in the manufacture of ready-to-lay roofing. Awarded highest honors at the Philadelphia Exposition.

Vulcanite is the most extensively used roofing in all Europe and made by roofing specialists, are significant facts to be considered.

Practically it means that Vulcanite Roofing is something entirely 'different.'

Vulcanite Passes All Tests

Submit Vulcanite to any test you can think of. The Freezing test—Fire test—Waterproof test—Acid test—Heat test. The most rigorous, in fact, that exist. Then compare it price for price, quality for quality, with any other roofing made. Remember that in the manufacture of Vulcanite Roofing the felt used is a pure all-wool felt—doesn't contain paper or some other cheap filler. Vulcanite is made very dense and firm, and is considerably heavier and thicker than other roofings.

Liberal Guarantees

Vulcanite is positively guaranteed for many years. Dealers and contractors are authorized to guarantee Vulcanite.

Users can obtain guarantee from the dealer, the contractor, or from us.

Fill out and mail the coupon below and we will send free a booklet of roofing information.

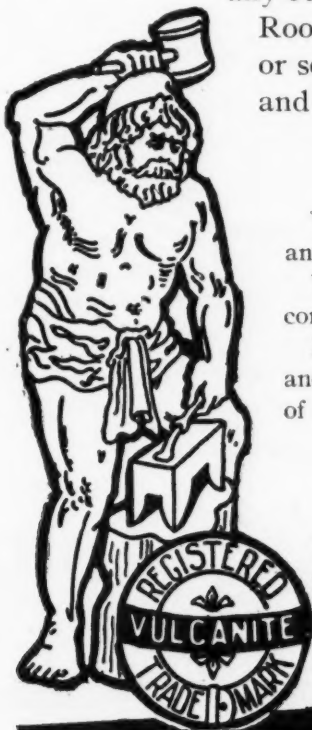
CUT OR TEAR OFF AT THIS LINE

**FREE
SAMPLES**

Vulcanite will not freeze or crack in winter—will not crumble in dry weather—will absolutely refuse to leak in wet weather. If your dealer does not carry "Vulcanite," write us for samples and free booklet. See "Vulcanite" before you buy other roofings.

WRITE TODAY—SURE

PATENT VULCANITE ROOFING CO., 625 Campbell Ave.
CHICAGO



You Want a Roof that will wear and won't leak

We insure you on these points by giving you a legal guarantee for 10 years.

That guarantee is good, because the largest ready roofing and paper mill in the world, with a capital of \$1,000,000, is back of it, and because that mill controls everything from asphalt to coating, that enters into the manufacture of roofing.

THIS GUARANTEE GOES
WITH EVERY ROLL



Compo-Rubber Roofing

Has struck the most extraordinary gait of popularity that has ever been known in the roofing industry. In the districts where it has been introduced sales have increased in the last six months 700%.

Every builder becomes more or less confused with the multitude of ready roofing brands that he is asked to consider, but after all his whole problem rests on one question:—

“Will This Roof Wear and is It Weather Proof?”

We answer that vital inquiry by giving you a **substantial legal document** with every purchase that absolutely insures your roof for 10 years. This guarantee definitely locates responsibility on our shoulders. A dealer may move out of town, may die, or may forget exactly what he did guarantee. This speaks for itself, and we advise you to keep it in your Safe Deposit Vault. We are the only Company that can afford to take a definite stand in this business, because we are the only Company that knows and controls every constituent of our roofing, asphalt, felt saturation, coating: beginning with the asphalt mine itself, and ending with the coating compound.

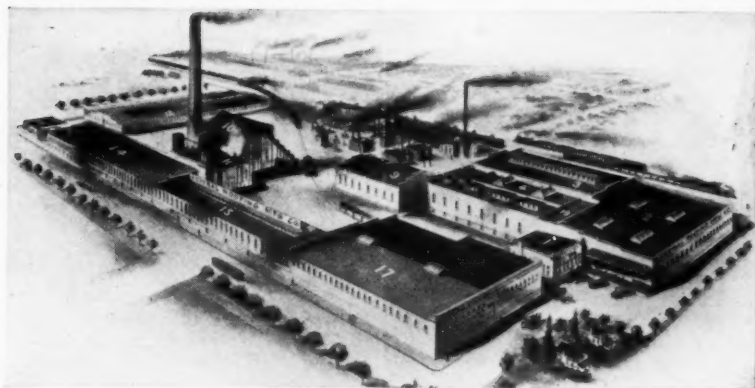
When you purchase COMPO-RUBBER ROOFING you do not have to bother about heat, acid or water tests, because the making of any test becomes unnecessary when we have given you our guarantee to make good.

Felt and Paper Mill, Roofing
Plant, Refineries
East St. Louis, Ill.

General Roof-

Sales Offices: East St. Louis,

Largest Ready Roofing Plant and Paper Mill in the World



Plant of
General
Roofing
Mfg. Co.

East St. Louis, Ill.

Capital \$1,000,000
22,000 Rolls Manufactured Every Day

What We Make

Compo-Rubber Roofing

Flint Coated Roofing

Gravel Surface Roofing

Asphalt Roofing

Building Papers

Tarred Felts

Deafening Felts

Carpet Linings

This mill and factory are complete in every particular. Instead of buying coal tar or asphalt in the open market, it owns its own asphalt mine, and this asphalt is the only one in the United States that is 99 per cent chemically pure, and that is the first reason why

Compo-Rubber Differs From All Other Ready Roofing

The purity of the asphalt prevents cracking, breaking, chalking and is responsible for its remarkable weather-proofness. Most other concerns purchase their felt from other factories. We manufacture our own, and then we saturate it and finally coat it so that we know the quality of everything that enters into and keeps COMPO-RUBBER up to our standard, and hence we are safe on our guarantee.

Five Pertinent Points Found Exclusively in COMPO-RUBBER Roofing:

1. Compo-Rubber 10 year guarantee in legal documentary form.
2. Compo-Rubber is the lowest-priced, high-standard guaranteed roof on the market.
3. Compo-Rubber by our methods can be laid in one quarter of the time required for shingles (at a reduced cost for laying); or tin (without any noise or clatter); or tar (without the smell and smoke).
4. Compo-Rubber costs 25 per cent less for fire insurance than shingle roofing.
5. Compo-Rubber is a non-conductor of heat and cold—saves coal in winter—keeps homes cool in summer.

Remember COMPO-RUBBER ROOFING will not crack, break, melt, rot or leak. It has the longest durability and the shortest cost of any prepared roofing on the market. It is cheaper than metal, shingles or tiling, is suitable for dwellings, barns, sheds, and buildings of every kind—requires no skilled labor, and we supply all the necessary appurtenances free.

ing Mfg. Co.
Chicago, San Francisco

Write at Once for Information Regarding Our Guaranteed Roofings

Trinidad Lake Asphalt is Nature's everlasting waterproofer.

Genasco Ready Roofing

is made of Trinidad Lake Asphalt, and doesn't crack, break, nor leak.

It lasts longer than any roofing made of the artificial waterproofer, such as coal-tar, stearin pitch and various other compounds. It is the most economical roofing for all your buildings.

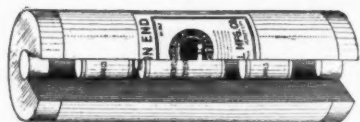
Mineral and smooth surface. Look for the trademark. Insist on Genasco. Write for samples and Book 76.

THE BARBER ASPHALT
PAVING COMPANY



Largest producers of asphalt, and largest manufacturers of ready roofing in the world.

PHILADELPHIA
NEW YORK
SAN FRANCISCO CHICAGO



Here's the Roofing You Ought to Use

Just as ready roofing has demonstrated its superiority over shingle, slate and tin roofs, so has MONARCH Asphalt Roofing conclusively proven its superiority over the usual ready roofing.

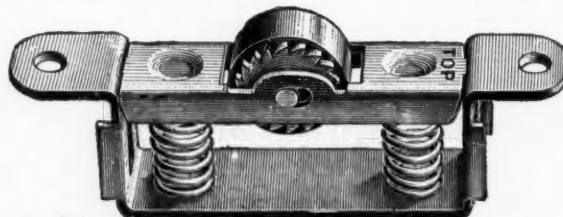
Genuine asphalt is acknowledged to be the most satisfactory roofing saturation and coating so far known. We use genuine Pitch Lake Trinidad Asphalt and all wool felt in the manufacture of MONARCH, and our method of applying the asphalt saturation, coating and mineral surfacing makes MONARCH a solid and perfectly combined whole — impervious to water and proof against flying fire-brands.

Know what you are buying — there is no substitute for genuine asphalt roofing. Send for Sample Set M-2.

Carpenters and Builders.—We know Monarch will justify our claims. You cannot find a better Roofing at any price. We earnestly desire you to give it a trial. If your dealer does not carry Monarch we will see that you are supplied direct.

Stowell Mfg. Co., Jersey City, N.J.
Philadelphia Chicago Kansas City

swelling of the sash or frame. The Automatic Sash Holder is a safeguard against falling windows with the usual results in shattered glass and crushed hands or fingers. It is positive and automatic in its action.



The shrinking or swelling of sash or frame is no longer of any consequence, as the holder adjusts itself to altered conditions automatically.

It is invisible, being inserted into the sash or stile, thereby eliminating the unsightly appearance of ropes and pulleys.

It prevents windows from rattling while in any position—a very great annoyance heretofore.

It can easily be adapted to old window frames.

A Roofing that Needs No Painting

Labor saving devices are constantly being discovered, and one of the most important for farmers has been the development of a new type of roofing which does not require continual painting to keep it tight.

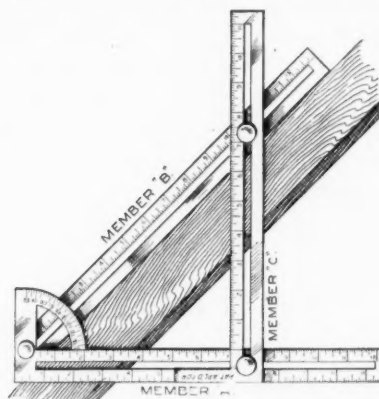
The leader in this new development is Amatite Roofing, which has a surface of real mineral matter. The pitch in which this mineral is imbedded is so adhesive that the mineral surface will not wash off.

After an Amatite Roof is laid there is nothing more to do to it. It is not necessary to look after it each year for painting or patching, and all the labor and cost of coating the roof is done away with.

The manufacturers of Amatite are glad to show samples of their materials, and these may be obtained by a postal card request addressed to the nearest office of the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans.

Framing Made Easy

As its name would imply, the A. B. C. Protractor Square is the simplest of all the tools devised to make the hard art of steel square framing easy. At the same time it is the



most efficient. Thus it is the best to use; it furnishes the easiest and quickest way of getting correct bevels, cuts and measurements. Solid and substantial of construction, it is very durable—nothing to loose, break or get out of order. It is built on scientific principles.

The Crookston Tool Company, Crookston, Minn., who

Building For Better Wages

By Prosper Welles



THE CARPENTER of yesterday might as well try to saw a beam with a try-square as to secure a higher position in his trade. This was because the theoretical knowledge of drawing, estimating, etc. required of the man who held a position as a superintendent, architect, or builder could be obtained only by going to college. Few had the time or money to afford this.

But today it is different. Hundreds of ambitious carpenters are qualifying for advancement during their spare time, in their own homes, and at a cost that is ridiculously insignificant compared with the results achieved. For instance, there is the case of Alexander McLean, 883 East 35th St., Brooklyn, N. Y., who was employed as a carpenter at \$2.50 per day. Being dissatisfied with his circumstances he took the I. C. S. way to better himself. As a result, he is now contractor and architect, and his earnings average \$100 per week. Mr. McLean says: "I could never have been able to hold my present position if it were not for your instruction. I think your Courses afford the best possible method for any ambitious workingman to secure advancement."

Then there is Robert W. Johnson, Box 118, Corona, N. Y., who advanced from a position as a carpenter earning \$15 per week, to an architect in the employ of Johnson & Bernston, at \$30 per week. Mr. Johnson also says that in his belief he would never have been able to make this advancement if it had not been for I. C. S. instruction. He further states: "I took a 4-years' course in a prominent New York school, but in my opinion a man can learn a great deal more in a shorter period of time from one of your Courses than from a course in this institution."

Let us relate the story of success made possible by the I. C. S. for Harry Blake, 1017 Lamar Place, N. W., Washington, D. C. Telling his own story, Mr. Blake says: "I am only too glad to recommend your Schools to any ambitious man whatever his present position or occupation may happen to be. While working as a carpenter just out of my apprenticeship, I enrolled in your Architectural Course. I tried two other schools and would say that your Course is the most practical, thorough, and complete of its kind. My earnings today are many times what they were when I first took up my studies with you. Last year I made plans for 90 buildings in this state. Among others I planned the Barber & Ross warehouse and structural iron plant, costing \$50,000; the Depot Quartermaster's warehouse, costing \$35,000; and made plans for an apartment house costing \$45,000. What I have been able to accomplish is possible for others to do through your thorough system of training."

The experience of Arthur Elliott, of 389 Clinton Ave., South St. Paul, Minn., is interesting. When he

started his I. C. S. Course of Training he had a smattering of all kinds of knowledge about the building trade, but he could not solve the simplest problem in mensuration. At that time he was employed as a foreman in a box factory. He is now an architect and his ability is well shown by the fact that in an open competition for the South St. Paul High School, Mr. Elliott's plans were accepted in competition with eleven of the leading architects of St. Paul and Minneapolis. His earnings have, of course, been doubled and tripled since his I. C. S. Training started him on the path to success.

It is almost needless for us to make any comment on these remarkable stories. Standing out in the light of their own vital human interest, they are living proofs of what the International Correspondence Schools can accomplish for a man who really wants to get ahead. No matter how scant your time may be, how small your education, how little your earnings, the I. C. S. can help you if you are determined to succeed. If you are a young man, we can help you like we did F. Woods Sterrett, of Sterrettania, Pa., whom the I. C. S. enabled to advance from a young carpenter earning \$2.25 per day to an architect earning \$7 per day. If you are an older man, we can help you as we did Opie M. Warner, 408 North Figueroa St., Los Angeles, Cal. Mr. Warner was practically helpless from injuries received in a railroad accident and was 49 years old when he enrolled in our Architectural Course. By the most praiseworthy perseverance and the painstaking efforts of our instructors, he graduated from this Course and is now an architect in business for himself, and his earnings average \$385 per month.

How YOU can gain advancement in this way; how you can qualify in your spare time and in your own home for a better position and better salary will be cheerfully explained free of charge if you are interested enough in your future welfare to send us the coupon below. This obligates you in no way whatever. Don't stumble on the first step. Don't be a "put-it-off!" Send it NOW.

International Correspondence Schools

Box 910, Scranton, Pa.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position before which I have marked X.

Architect	Estimating Clerk	Foreman Mach't
Arch'l Draftsman	Bridge Engineer	Sh.-Met. Pat. Drfts.
Contr. & Builder	Civil Engineer	Mining Engineer
Building Inspector	Surveyor	Textile Expert
Struct'l Engineer	Mechanical Eng.	Bookkeeper
Struct'l Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Ad Writer
Supt. of Plumbing	Electrical Engineer	Window Trimmer
Form. Steam Fitter	Electrician	Illustrator
Plumbing Inspect'r	Elec.-Light. Supt.	Civ. Ser. Exams.
Heat. & Vent. Eng.	Elec.-Ry. Supt.	Chemist

Name _____

Street and No. _____

City _____ State _____

EVERYBODY



USES

CLIMAX or VERIBEST

ASPHALT RUBBER

ROOFING

YOU CAN LAY IT YOURSELF

It Costs So Little. Costs one-fourth as much as shingles, and lasts twice as long. We are manufacturers. Our prices lowest. **We pay the freight.** We guarantee safe delivery—making good any damage or shortage of R. R. Co.

So Quickly Done. We ship from the nearest Branch Warehouse same day order is received. Roofing is in Rolls 108 sq. ft. each. Covers 100 sq. ft. of surface. All materials furnished. Anybody can lay it who can drive nails. Can be laid over old shingles.

So Durable. Long fibre felt—every thread thoroughly saturated with pure Asphalt. No coal tar. Coated with pure Asphalt. Light—strong—elastic—almost everlasting—more so than metal or shingles. Adapted for flat or pitched roofs, and for sides.

Weather-Resisting. Coldest weather can't damage it, nor make it hard or brittle. Always flexible and elastic—can't crack, chip, buckle, or shrink. Will not melt or get sticky in hottest weather. Cannot dry out, rot or rust. Soft and pliable like a sheet of rubber—clings close and snug to any roof. Snow, rain, wind and sun can't affect it.

Fire-Resisting. Contains no tar or other inflammable material. Spark and fire-brand proof. Insurance companies make same rate as on tin and iron roofs.

Guaranteed. If goods are not exactly as claimed, return them and we will refund your money. Is that plain? Your own judgment tells you we must make and sell you the best roofing to stand that plain guarantee.

Free Book and Samples. Write today for our Roofing Book, Samples and Prices.

McHenry-Millhouse Manufacturing Co.
STA. D. SOUTH BEND, IND.

manufacture the Protractor Square will gladly furnish full information in regard to this tool. Write to them.

Ready Roofing and the Guarantee Question

"We guarantee it."

Almost every known concern that puts out a prepared roofing that has any merit, must be in a position to say the above sentence. In most instances, a purchaser has his dealings with the local dealer of his town, and this local dealer usually clinches his sale by stating that it is guaranteed goods.

Five years afterwards, to whom does the purchaser look in case his roof is leaking, or has proved defective by cracking, breaking, or in any one of the one hundred ways that a roof can go wrong?—to the dealer?—the dealer may have moved out of town, or he may have died or have forgotten exactly what he did guarantee, or have guaranteed only a limited number of things. At any rate, the purchaser may find it difficult to get some new roofing, after he discovers that the guarantee was not definite and he cannot prove what was guaranteed.

It is not only unsatisfactory to the purchaser but unfair to the dealer to place this burden on the latter's shoulders. The General Roofing Manufacturing Company, of East St. Louis, has taken an initial step in completely and thoroughly solving this problem. They definitely place the responsibility upon themselves in the form of a substantial legal document, which covers the situation and can be kept by the purchaser for years, and then taken out and presented if anything goes wrong.

They own their own asphalt mine and it is claimed that they are the only factory using asphalt that is 99 per cent chemically pure. In addition, they control and manufacture everything from the felt to the coating compound that enters into the making of not only their widely known brand—Compo-Rubber—but everything that leaves their shipping platform.

They have used two phrases in connection with distributing their goods that have widely advertised Compo-Rubber and the company's method of doing business:

"Time is the *only* test of roof durability."

"Compo-Rubber is the *only* ready roofing with the *real* guarantee."

One of the most important moves that has yet been made in this progressive, wide-awake company, is to price and sell ready roofing as a staple instead of a high-priced specialty. This move will be felt all along the line in the coming fall, and will in itself do much to vastly promote the volume of business in the ready roofing line.

Ackermann's Rapid Floor Scraper

The latest floor scraper to be placed upon the market is the invention of John B. Ackermann, of Grand Rapids, Mich.

PEARSON'S IMPROVED NAILER

A Hand Nailing Tool!



Especially adapted for driving shingle nails. Its weight is about two pounds and can be used with gloves or mittens on in any season. It can be used on a roof of any pitch as well as on a level surface. It is a time saver and a money maker and a great advantage over old way of driving nails.

Ask your dealer for it or write.

Pearson Mfg. Co.
Robbinsdale, - - Minnesota

COLUMNS FOR CONTRACTORS

OUR SPECIALTY IS
TO SAVE YOU MONEY

Round & Square Columns
Base Plates
Sills Etc.
for Buildings

CANTON FOUNDRY AND MACHINE CO.
CANTON, OHIO.
U.S.A.

LUMBER

WE SAVE YOU \$100 to \$300 ON EVERY CARLOAD INCLUDING FREIGHT to YOUR STATION

EXTRA!

Send at once for a free copy of Our 1908-9 Catalog of Millwork and Building Material. This latest and greatest catalog is larger, more complete, more interesting, than any heretofore issued. It is richly illustrated in colors. Shows all the new creations in millwork styles—presents page after page of new and exclusive designs—contains a number of new departments.

And, best of all, from the standpoint of the Carpenter and Contractor, it makes

Startling Reductions in Lumber and Millwork Prices

The low prices in the New Catalog supercede all previous quotations. You should, therefore, send for a copy immediately, so as to take advantage of the new levels reached by Gordon-Van Tine prices.

The new catalog keeps you in touch with the latest developments in the Lumber and Millwork situation. You need it as a basis for figuring estimates on new buildings or remodeling old buildings. The money-making helps and hints that you will find all through its pages, and the cut prices on everything in Millwork, Lumber, etc., will enable you to

Double Your Profits ON EVERY JOB

Remember that we champion the cause of the Carpenter and Contractor, as against the outrageous extortions of the Lumber Trust and the State and National Associations that attempt to dictate prices.

Send your request for Grand Free Millwork and Builders' Catalog direct to

Gordon, Van Tine Co.
DAVENPORT, IOWA



We are now quoting **Saw Mill Prices** on Lumber in carload lots of 8,000 feet or more.

OUR CUT PRICE BUZZ SAW

Is making things hum—cutting the very heart out of High Prices!

Lumber, Lath, Shingles, Sheathing, Timbers, Dimension — Everything

that goes into a building above the foundation, offered at a tremendous cash saving, with a positive guarantee that it is well manufactured,—that the **grades** are right and the **count** is right and that every item is **bright, new, clean and perfect.**

NO TAX TO PAY TO THE MIDDLEMAN

Our **Saw Mill Prices** simply mean that you pay only **one profit**—instead of the pyramid of profits that jobbers, "scalpers" and retail dealers add to the price at the mill. These middlemen's profits run from 33 1/3 to 50 per cent—without adding a cent to the value of the lumber.

SEND FOR DELIVERED PRICE LIST!

We carry millions of feet in stock for quick shipment. Orders filled within 48 hours of receipt. Safe Delivery and Satisfaction Guaranteed.

5000 Bargains in Millwork and Building Material

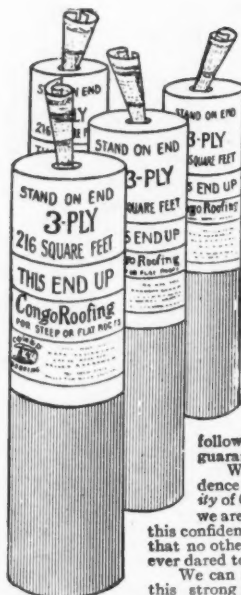
Write for complete catalog of Sash, Doors, Mouldings, Inside Finish Stair Work, Porch Work, Roofing, Mantels and Grates, Hardwood Flooring, Ladders, Grilles, and Colonnades, etc.

All Millwork 50 per cent Below Retail Dealers' Prices.

GORDON, VAN TINE CO., 431 Federal St., Davenport, Ia.
Largest Independent Lumber and Millwork Plant in the World

MILLWORK

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



**A GUARANTEE BOND
INSIDE EACH ROLL OF
CONGO
NEVER LEAK ROOFING**

A GOOD many roofings carry guarantees. Most of these are not worth the paper they are written on. They are full of provisos that no one can live up to, and you have only the manufacturers' word behind them.

We looked into this proposition some time ago, and determined that we would offer a guarantee with every roll of Congo that would mean something. We therefore went to the National Surety Company, a corporation with over \$2,000,000 of assets, and arranged with it to furnish with every roll of Congo a genuine Surety Bond.

It guarantees that our three-ply Congo Roofing will last ten years, if the directions are followed—and the Surety Company stands behind that guarantee to the limit of its resources.

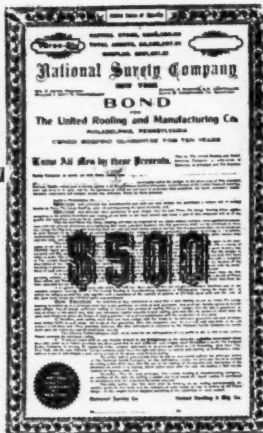
We mean to show the public that we have confidence in the durability of Congo, and that we are willing to back this confidence up in a way that no other manufacturer ever dared to.

We can afford to make this strong guarantee because we know Congo will last the full period of the guarantee, and more. It has always given better satisfaction and all round service than any other ready roofing made.

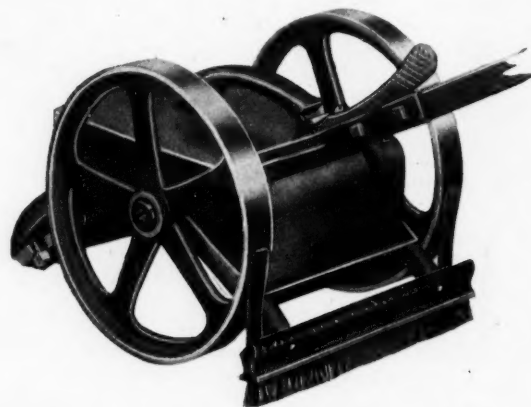
SPECIAL NOTICE—If any Congo rolls that you purchase do not contain Guarantee Bonds, write us at once, telling us where and from whom they were purchased, and we will at once mail you the missing bonds.

UNITED ROOFING & MANUFACTURING CO.

Successor to
BUCHANAN-FOSTER CO.
555 West End Trust Building
PHILADELPHIA
Chicago San Francisco



It is known as Ackermann's Rapid Floor Scraper. One of its main advantages over others is an exclusive automatic brush attachment, which is patented and cannot be used by



other machines. The action of this brush sweeps away all shavings, grit, dust and other obstructions, keeping the floor clean as each cutting stroke is made, and prevents vibration and dulling of the knife blade. Another strong feature is a simple eccentric device by which the knife blade can be instantly moved or set at any angle, thus securing a "drawing cut," and bringing the blade across the floor surface with an even, hand-like movement. It is said no floor scraper can



be a success without this movement. By simply reversing the position of this machine (turning it over) it forms its own vise and the knife is ready to sharpen without removing it from the machine. More details and the facts as to Mr. Ackermann's guarantee and remarkable offer on this machine will be found in his page advertisement in another part of this issue.

Gas Engine Points

The modern farm is the best example of the tremendous commercial development of the century. An engine is required by the up-to-date farmer for scores of purposes upon which our fathers were satisfied to spend their manual labor.

The Weber Gas Engine Company of Kansas City may justly be considered a great civilizer because it was quick to realize the advantages to the farmer of its 6 horse-power engine, and for twenty-five years has been filling the demand with the most powerful, durable and reliable engine ever produced.

When you purchase a Weber Gas Engine you get the engine which is giving satisfaction to 16,000 users—and you get an engine guaranteed to give satisfaction to you. This

**Keep your BLOCK PLANES
and
BEVEL PROTRACTORS**

**IN GOOD CONDITION—
BY NOT USING THEM**

**GET A
FOX TRIMMER**

Our new Catalog No. 85 on request



FOX MACHINE COMPANY

756-776 N. Front St.

GRAND RAPIDS MICH.

Write for the Lowest Millwork Prices Ever Quoted

YOU will save more money as a builder, or make more as a contractor or carpenter, by letting us send you this New **FREE MILLWORK CATALOG** and **FREE ESTIMATES** on your work.

Our New Warehouse Prompt Shipping Facilities

We carry largest stocks of every article shown and can ship most promptly from our new Chicago Warehouse—the outgrowth of over 15 years' experience selling millwork direct to the user. No delays. Prompt advice on any point of materials to use, plans, etc., and a liberal, fair, square deal on any **Guaranteed Millwork or Building Materials** that you are needing for your own building or on work for some one else.

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This Grand Book of Building Materials and Millwork of the highest quality, established by the Sash, Door and Blind Manufacturers' Association of the Northwest, is

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if you write for it. You'll find that it shows materials at such low prices as will save you from 20 to 75 per cent. on what you must ordinarily have to pay elsewhere. Buy direct from our factory **ONCE** and you will, like thousands of others, become one of our regular customers. Everything just exactly as represented.

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Just Issued — using paper in carloads to describe and illustrate our HIGHEST QUALITY BUILDING MATERIALS

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guarantee is the most liberal and binding ever issued for a gas engine; in fact, this guarantee is possible only because the engine has been given a quarter of a century of testing and trial, and meets the most critical demands. An engine should last a life-time; you can't afford to experiment. It's economy to get the best when you can get it at the least cost, and the Weber Gas Engine is the most for the money because every dollar you pay represents value which you receive; there are no middlemen, wholesalers, jobbers, or agents to get commissions on your purchase. You buy direct from the manufacturer. Weber Gas and Gasoline Engine Company, Box 609, Kansas City, Missouri.

Modern Requirements and Modern Methods

In connection with the erection and finishing of the average modern structure, there are many fastenings of one description or another, to be made to brick, stone, marble, tile, concrete and other masonry.

In the old days, one first used wood plugs, which were never satisfactory, because, as is well known, wood expands and contracts under climatic changes to such an extent that the fastening is never positively secure. Then, too, in a very



short time the wood plug rots away so that the fastening at best is only temporary.

Next came what is known as the "Leading-in" process, which while messy and tedious, really did mark an improvement over the unstable wood-plug method. In "Leading-in" the hole to be drilled is necessarily a very large one, for

it must provide not only for a space to accommodate the bolt or screw, but also for pouring in around the same a quantity of molten lead, which cooled and hardened, made a fastening at least secure. This tedious process while an improvement, only served to emphasize the necessity for a better way.

Then came the Star Expansion Bolt, designed and produced along studied principles in various sizes to conform to the ordinary bolts and screws in every-day use the country over.



The principle involved is so simple, the expanding qualities so positive and sure, the use and application so easy, that it must seem that finally a really puzzling problem has been satisfactorily solved.

Star Expansion Bolts and Anchors in their many various styles and sizes have gained universal recognition as the modern improved means of making attachments of any sort to all kinds of masonry, marble, tile, slate, and like material. They are made in either malleable iron, brass, or lead composition metal, in any size from 1/8 inch to 2 inches in diameter, to fit wood screws, lag screws, or machine bolts.

The advantages briefly summed are as follows: Smallest



possible drilled hole for insertion. Ease in using—time and labor saved. Adaptability of expansion parts for use with

STAR EXPANSION BOLTS

for making
Quick Secure Fastenings

TO BRICK, STONE, CONCRETE & OTHER MASONRY

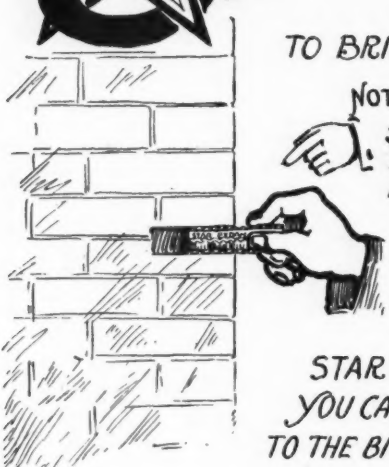

NOTE: THE SIMPLE PRINCIPLE INVOLVED—
SIMPLY DRILLING AND PLACE STAR SHIELD WITHIN
THEN PUT YOUR SCREW THROUGH MATERIAL TO BE
ATTACHED INTO SHIELD AND FASTEN TIGHT

STAR EXPANSION BOLTS COME IN ANY SIZE;
YOU CAN GET THEM FROM A NO. 5 SCREW, UP
TO THE BIG BURLY SIZES AS BIG AS THEY COME

ALL STAR BOLTS WORK ON THE SAME SCIENTIFIC PRINCIPLE WHICH INSURES A POSITIVE INSIDE LATERAL EXPANSION WHICH PREVENTS CHIPPING OR DEFACING THE OUTSIDE SURFACE
IF YOU WILL TELL US YOUR REQUIREMENTS, WE'LL BE GLAD TO SEND YOU CATALOG & SAMPLES TO TRY.

STAR EXPANSION BOLT CO.

BAYONNE, N. J., U. S. A.

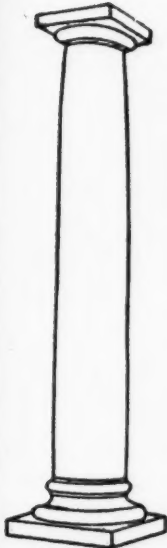

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Colonial Columns

SAVE
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DIRECT FROM FACTORY TO CONTRACTOR

HERE ARE TWO REAL BARGAINS

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No. 1.

OUR COLUMNS ARE THE BEST ON THE MARKET. WE SELL DIRECT TO CONTRACTORS, CARPENTERS, BUILDERS AND HOME OWNERS ALL OVER THE UNITED STATES AT FACTORY PRICES, POSITIVELY SAVING YOU 50 PER CENT OR MORE. INCLUDING THE FREIGHT. WE SHIP EVERYWHERE AND GUARANTEE SAFE DELIVERY. OUR CATALOG CONTAINS HUNDREDS OF BARGAINS ON GLAZED SASH, DOORS, INTERIOR FINISH, MOULDINGS, STAIR WORK, PORCH WORK, GRILLES, ETC. SATISFACTION AND SUPERIOR GOODS ALWAYS GUARANTEED

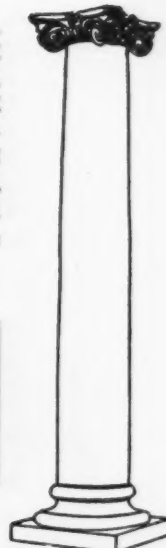
WRITE TODAY FOR OUR MILLWORK CATALOGUE

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6x6,	8 Ft.	\$1.72
8x8,	8 Ft.	2.06
8x8,	9 Ft.	2.35
10x10,	8 Ft.	2.99
10x10,	9 Ft.	3.83

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DIRECT TO CONSUMER AT
SAW MILL PRICES. SEND
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10x10,	8 Ft.	3.79
10x10,	9 Ft.	4.14

No. 2217
Primed
No. 1.

Bayer Bros. Sash & Door Co.

Dept. C., ST. LOUIS, U. S. A.

DIRECT
FROM
FACTORY

DEALER'S PRICE
for this outfit would
be \$35 to \$40

Shipped on Approval

This mantel, No. B. 27, is made of selected figured Golden Oak. It is 80 inches high, 54 or 60 inches wide; 28x16 Bevel Plate Mirror. Has Quarter Sawn Oak columns of 8 inches in diameter. Tile facing, 60 x18 inch hearth and black finished grate and frame.



No. B 27 Mantel

Flooring For room 10 x12 ft. \$9.60

Genuine Red Oak, 3/4 in. by 1 1/4 in.—Seasoned, Matched, ready to lay. Price per 100 square feet, random lengths, quality guaranteed, \$8.00. Cheaper and better than a good carpet. Sanitary—artistic—durable. Quick shipment.

TILE your Bathroom, Kitchen and Vestibule, your Store or Bank Floor. I can save you money on the only Perfect Sanitary Wall Covering made.

Write for complete catalog of Mantels, Grates, Tiles for floors and baths, Slate Laundry Tubs, Grilles, etc. It is **Free**. Or send 10 cents to pay postage on our Art Mantel Catalog. Mantel Outfits from \$12 to \$200.

WM. G. OSTENDORF, 2927 N. Broad St., Philadelphia, Pa.

SHULTZ Modern Store Fronts
of Steel and Brass
CORNER POSTS, MULLIONS AND TRANSOM BARS



Handiest, Strongest and Most Practical Bar on the Market. Long Life—nothing to rot out. Glass Bedded on Spanish Cork, preventing cracking or crushing of glass. No putty, yet ABSOLUTELY WATER AND DUST PROOF.

Simply incomparable with old fashioned styles. They add immensely to the Beauty, Utility and Rental Value of Buildings.

ARE LOW IN COST.

Architects, Contractors and Owners are invited to write me for descriptive literature, prices or estimates.

Also Shultz Patent Burglar Proof Coal Chutes. All Steel Cork Bedded and Ventilated Bottom Bar

G. H. SHULTZ, MANUFACTURER, ST. JOSEPH, MO.

ALL-STEEL BURGLAR-PROOF COAL CHUTE



The Neatest, Strongest and Most Convenient Coal Chute Made. Prices also Lowest. No modern residence complete without it. Locks itself when closed up. Can only be opened from inside. Architects, Contractors and Owners are invited to write for descriptive circular.

G. H. SHULTZ, Manufacturer, St. Joseph, Mo., U. S. A.

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STANDARD—Lock Joint—METAL SHINGLES

**ORNAMENTAL
EASILY
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**GUARANTEED
WEATHER
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*We can save
you money on*
CORNICE
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ABSOLUTELY STORM PROOF

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**CANTON
Manufacturing
Company**

1310 to 1320
East Second Street
CANTON
OHIO

**Amatite
ROOFING**

TRADE MARK B



THIS advertisement will bring to your attention the best and cheapest ready roofing on the market. Here is how we prove it the best.

In the first place Amatite is made in one standard thickness, whereas other ready roofings range from a thin, flimsy half-ply to a three-ply thickness.

The three-ply thickness (which by the way is only one sheet of felt) is the only kind that can be compared with Amatite.

But right here is the point. Amatite is better made, has better waterproofing material, and weighs more per square foot than the three-ply grade of other makes, and costs much less.

These facts make Amatite the most desirable roofing made.

But in addition to its superiority in material and manufacture, Amatite has one distinction which makes it stand out above all others. It has a real mineral surface.

It is hardly necessary to state the advantages of such a mineral surface, the freedom from painting or coating, the perfect protection against all kinds of weather, the great durability.

This mineral surface is embedded in a layer of Pitch, the greatest known waterproofing material. Beneath this in turn are two layers of the best grade of wool felt—cemented together by more Pitch, making the whole a roofing that is absolutely waterproof.

No other ready roofing can compare with this mineral-surfaced, waterproof, weather-proof, durable roof. That's why we say—Don't buy your roofing until you have seen Amatite.

FREE SAMPLE AND BOOKLET
Send for Free Booklet and Sample to-day. It will pay you to get acquainted with Amatite. Address nearest office.

BARRETT MANUFACTURING CO.
New York, Chicago, Philadelphia, Boston, Cincinnati, Minneapolis, Cleveland, St. Louis, Pittsburg, New Orleans, Kansas City, London, Eng.

stock bolts and screws. Positive expanding and holding qualities—strength, and a clean cut finished appearance, which ornaments rather than defaces surface matter.

Star Expansion Bolts and Anchors are daily demonstrating their time and labor saving qualities to thousands of carpenters, builders, plumbers, electricians, iron workers, and others who have investigated the claims made for them. If our readers desire to become better posted we have arranged with the manufacturers—the Star Expansion Bolt Co., of Bayonne, N. J., to send samples and catalogue (completely descriptive of a line comprising expansion bolts, toggle bolts, and drills for brick and stone) promptly upon direct application to the Bayonne office.

Catalogue Extraordinary

The finest, most attractive and most valuable catalogue that it has been our privilege ever to examine, has come to hand recently, with the compliments of the Berger Manufacturing Co., Canton, Ohio. It is descriptive of the well known "Classik" metal ceilings, showing modern installations, methods of construction, details of parts and complete designs of standard patterns; the whole illustrated with the very finest photographic presswork.

The Berger Manufacturing Company was the first to conceive the idea of producing metal ceilings which could be definitely classified as to style or period of decoration represented; correct, harmonious, and appropriate throughout, yet embodying the flexibility and wide range of application which is such an important characteristic of metal ceilings.

Metal ceilings which had been previously produced were but a conglomerate mixture of incongruous styles. That objectionable characteristic was effectually removed when The Berger Manufacturing Company developed and placed upon the market their now well-known line of "Classik" metal ceilings, embodying the following historical styles:

Greek, characterized by simplicity, regularity, and artistic



delicacy of treatment. A very pleasing style of great originality.

Roman, a bold, massive, and more elaborate treatment than the Greek.

Romanesque, a remarkably effective delineation of this rich yet dignified style. Eminently suited for church interiors.

Gothic, thoroughly in harmony with the characteristics of this famous style of architecture.

Moorish, rich in geometric interlacings and especially well suited for interior finishings in oriental style.



Asbestos "Century" Shingle Roof—Club House and Office, Pabst Farm, Oconomowoc, Wis.; Fernekas & Cramer, Architects, Milwaukee; Consolidated Sheet Metal Works, Roofing Contractors, Milwaukee

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

"Sparks on the roof" is the cause of one-fifth of all fires. If the architect or builder wanted to *fire-proof* a client's home, what roof could he *rely* on?

Reinforced concrete is the ideal fire-proof material—Asbestos "Century" Shingles are homogeneous sheets of concrete, reinforced in every direction with asbestos fibres. Fire cannot burn them, break through them, crack, melt, chip, or flake them. The shingles can be laid so as to keep the roof intact even after the framing has burned away within. They lower insurance rates.

Made in three colors—Newport Gray (silver-gray), Slate (blue-black), and Indian Red, in numerous shapes and several sizes. Five cents per square foot (and upward) at Ambler, Pennsylvania.

The Keasbey & Mattison Company

Factors - - - - - Ambler, Pennsylvania

There's Always Big Inducements on Our Slate

Our Specialty

SEND FOR OUR CATALOG No. 17

Here are a few items of our product on which we will quote special prices for a short time.

Send for our New Catalog No. 17. It shows our complete line. It contains 96 pages, all illustrated. Do it now—Write today.

Caps

Grilles

Columns

Brackets

Balusters

Mantels

Mouldings

Stair Work

Porch Work

We are Specialists in Our Particular Line

Send for our New Catalog No. 17 — 112 Pages.

CHICAGO EMBOSSED MOULDING CO.

583-587 Austin Ave.

CHICAGO

CHICAGO EMBOSSED MOULDING CO. (INCORPORATED)

583-587 AUSTIN AVENUE

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Italian Renaissance, true to style, artistic, beautiful, and effective throughout. A style of great merit.

French Renaissance, one of the best French styles of ornamentation. Rich in ornamental detail.

German Renaissance, characteristically substantial, yet elaborate. Notably effective where bold, massive treatment is desired.

Rococo, a very rich collection of fantastic scrolls, elaborated with great freedom and originality.

Empire, harmonious, and thoroughly emblematic of the victorious Empire.

Colonial, the oldest American style; very popular and possessing much merit.

The successful evolution and development of these authoritative historical styles have placed "Classik" metal ceilings upon the true plane of decorative art, and at the same time the specific constructional advantages of metal ceilings have been fully retained; thus there is effectively secured the happy combination of a light, easily handled and easily applied finishing material adapted to the varied architectural requirements of modern construction and thoroughly acceptable in all of its details to those conversant with correct practice in interior decoration and finish.

The Old Way and the New

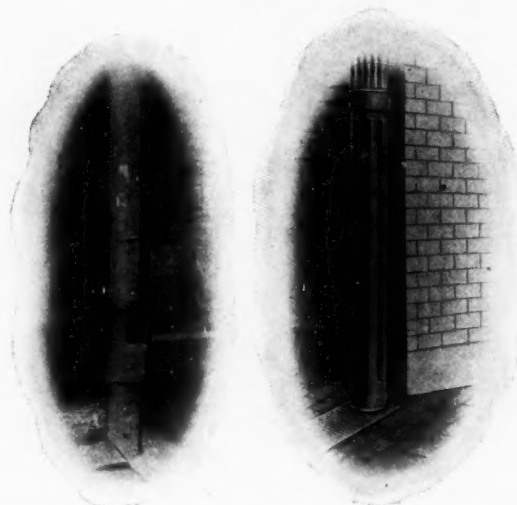
These photographs were taken within three blocks of each other. Both spoutings were put on about the same time.

One could not support the weight of ice. The Universal did. One is easily damaged by being bumped. The Universal not.

Which gives the better appearance? Which is the cheaper? Which do you prefer?

The Universal cast iron conductor connections and boots mark a great advance over the ordinary cast conductor shoe.

In addition to the excellence of the material of which these connections are made (making them durable) and the excellence of their design (making them sightly) the method of



attaching them to the building is a leading feature. With wall brackets they are secured and adjusted at any desired distance from the wall. They may be easily removed for cleaning without defacing the wall. They are economical; also can be recommended for the finest work.

Write to the Canton Foundry and Machine Company, Canton, O., today, for full particulars.

Mantels and Fire Place Goods

The Burritt mantels, made by "The Mantel Folks," the A. W. Burritt Company, Bridgeport, Conn., have become a stand-

"TARGET AND ARROW OLD STYLE" Brand of ROOFING TIN

Made only by N. & G. Taylor Co. at their works at Philadelphia. This brand of tin is exactly the same durable quality sold for more than fifty years. The evidence to prove the value of this tin as a permanent, weather-proof, fire-proof roof covering is overwhelming. Roofs of this old-time, hand-made tin still giving good service after ten to fifty years' wear, and hundreds of letters written us in the last three years by architects and roofers bear witness to its lasting qualities. This is the only tin now made according to old-time standards of manufacture—the only tin made entirely by hand and of materials that have proved in use on the roof to be the best for the purpose.

No need to puzzle over this or that method of manufacture or material for making tinplate nowadays, when you can get the same durable tin that has made the name of "TAYLOR" famous in the tinplate trade. Roofers who use "TARGET AND ARROW OLD STYLE" tin, and use it right, are a well-satisfied class, steadily building reputations for good roofing work.

Roofers can get this brand of tin direct from our stocks at

CHICAGO ST. LOUIS OMAHA
KANSAS CITY DENVER SAN FRANCISCO, etc.

or promptly from all leading wholesale hardware jobbers throughout the West and South.

Send for free booklets: "A Guide to Good Roofs," "Some Roofing Don'ts," "Terne and Tin Plate," "History of the House of N. & G. Taylor Co.," "Good Roofing Tin," "Tin Roofers' Hand Book," etc.

N. & G. TAYLOR CO.

Established 1810 Manufacturers of TIN and TERNE PLATE of all kinds PHILADELPHIA



FLOOR FINISH

is a TRIUMPH OF THE VARNISH MAKING ART

No other Floor Varnish or Floor Finish of a varnish nature is so tough, so elastic or so durable. It produces a smooth, handsome gloss finish unaffected by water or atmospheric conditions. It will not crack, chip or mark white.

If you are interested in a high-class article for floor work—a finish that is made to walk on and to stand the severe wear to which floors are subjected, write us for further information.

Our New Catalogue "D" listing our complete lines of "Nice" Varnishes, Fillers, Paints, Stains, Enamels, Colors, etc., will be ready very soon. We wish to send it to every reader of this paper who will write for it.

EUGENE E. NICE

272-274 So. 2nd St. PHILADELPHIA
201-3-5-7 Spruce St.

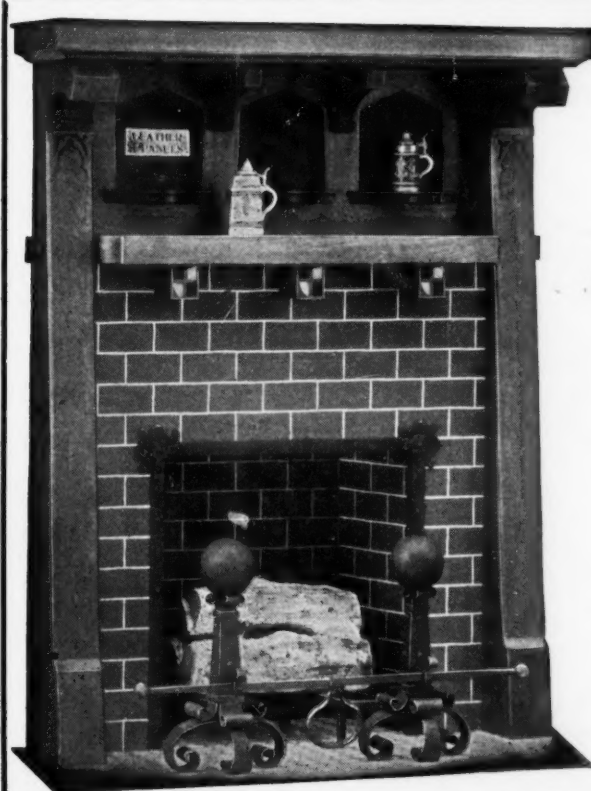
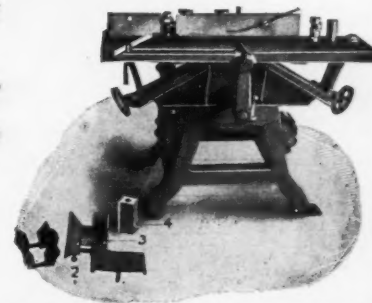
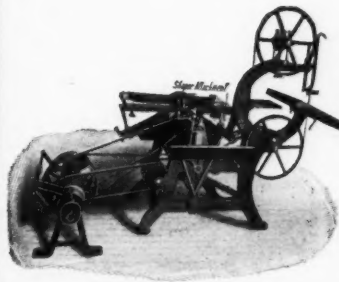
"DEFIANCE"

Cuts shown in ad will give you an idea of our latest improved

Variety Woodworker
Six Distinct Machines in One

Write for catalogues and full descriptive matter.

THE SIDNEY TOOL COMPANY
Sidney, Ohio



No. 468.—Modern Mission Style 5 feet 11 inches high and 5 feet wide; heavy plan, shelves recessed leather panels; the brackets supporting main shelf are carved with Spanish Insignia. Forian-Vitrea tile hearth and facing. Hand-wrought Andirons of Romanesque design.

Pick Just the Mantel You Want

Here is one of many Lorenzen Mantels. You can take your choice of hundreds of others—Colonial, Craftsman, Early English and period styles in all woods and finishes. You know how much a mantel adds to a room—particularly

LORENZEN MANTELS

They have a distinction of design and workmanship not possessed by any others. Our well-equipped factory, skilled workmen, large stock of air-seasoned lumber of every description, and years of experience making mantels, are a strong guarantee to you of quality and reliability. As for our prices—our immense output enables us to sell close and distance all competition.

Free Catalog—Let us send you the largest and finest catalog of wood mantels ever issued. Each copy costs us nearly \$1. But we send it free to any carpenter or builder. If you don't find what you want in it give us specifications and we will make to your order. Write for the catalog today.

Tiles and Mosaics—We furnish and set all kinds of Tile and Ceramic Mosaic work and will be pleased to submit designs and estimates on application.

Chas. F. Lorenzen & Co.

305 No. ASHLAND AVE., CHICAGO.

ard among carpenters and builders, and, because of their excellent design, perfectly seasoned stock, thorough workmanship and beautiful finish, are **gaining** new friends every day.



A new catalogue, A, illustrates the complete line and shows prices that are surprisingly low on all mantel, tile and fire-place goods. This company makes a specialty of mantels of special sizes, woods and designs to conform with architects' sketches and details.

Steel Ceiling Economy

The Eller Manufacturing Company, Canton, Ohio, present to the trade their new catalogue of selected, classified de-

signs of stamped steel ceilings. While designs are shown for square rooms only, that nook or crook cannot be made in a ceiling which this company cannot fit with steel and make look neat and attractive.

It is little use for us to elaborate upon the benefits to be derived from using stamped steel for ceilings, for there is hardly a spot on the map into which they have not been introduced and their worth tested.

In Eller's ceilings, the modelers' skill has not only been directed to produce patterns which would please the eye, but to harmonize the classical arts and make lasting beauty, for in such there is worth and not monotony. Realizing, however, that much was to be done after the modeler had completed his work, the Eller people have not stopped. They secured experienced and able mechanics to take up where the modeler left off, and so arrange the dies that each would member properly with others, thereby producing close-fitting joints and reducing the cost of erecting, an essential item, of which every buyer should take note.

New Miles Block Machine

Literature has been received describing a new machine that has recently been completed by The Miles Manufacturing Company, Jackson, Mich. It is designated as the No. 5. A cut is shown on page 756.

They report a number have already been sold and the first complaint regarding them is yet to be received. On the other hand many favorable reports have come in and the users acknowledge they are right in every respect.

The same principle is employed which has been used in their No. 2 machine. The changes made are as follows: End gates are hinged to the frame and swing away from the stone, enabling the operator to make blocks faster with less

SAMSON SPOT CORD

is guaranteed free from bad splicing and rough braiding.

You don't have to waste any of it by cutting out rough places, and it is free from the imperfections that make cheap cord wear out so quickly. distinguished, even after the colored spots, our These spots are insurance builder, and the owner of inferior cord. We have some Spot Cord pencils, and shall be glad to send you one, as well as samples, etc. :: :: ::



Spot cord can always be the label is removed, by registered trade mark. for the architect, the against the substitution

SAMSON CORDAGE WORKS

BOSTON, :: :: :: MASS.

Heppes NO-TAR ROOFING is Easy to Lay



—Because it is as flexible as rubber, though tough as leather and hard as flint.
—Because it lays smooth and skin-tight.
—Because we furnish simple instructions **free in every roll.**

—Because we supply a complete Roofing Book, with photographs, showing how to measure roofs and make chimney and wall flashings, well finished eaves, valleys, and gutters;

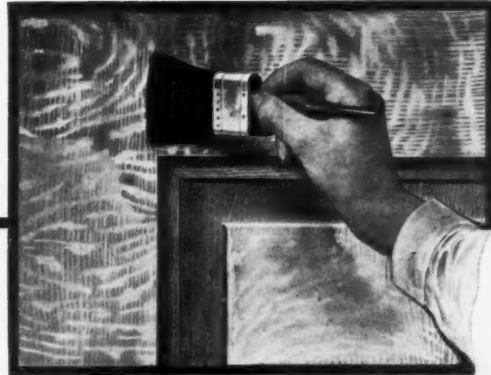
—How to cut the roofing to fit corners, angles, and odd spaces, without waste;
—Where to nail; how to cement laps;
—How to cover old shingle roofs;
—How to secure contracts, and how to make good money easily in the roofing business.

FREE SAMPLES FOR EXAMINATION AND TEST

Learn all about the roofing that is made of genuine asphalt without a trace of tar. Examine the coatings of mica and flint. Note the extreme toughness of the long-fibre wool felt. Get the facts about our wonderful process of water-proofing under intense heat and tremendous pressure.

Everything about this popular roofing is told in the free Roof Book. Send today.

THE HEPPES CO. 642 S. 45th Ave.
CHICAGO



Varnish You Can Depend On

All your pride in a finished work—and much of the owner's satisfaction—may be spoiled by applying poor quality varnish—a varnish that cracks—shows brush marks—is uneven and wrinkled.

Nothing is gained by the use of cheap varnishes anywhere—especially for interior work where so much of the "tone" depends on the varnish. The most reputable architects, the most careful painters and builders now definitely specify

Lowe Brothers "Little Blue Flag" Varnishes

for work they want to have right, without question. They have learned they can invariably depend on it.

And the reason is, "Little Blue Flag" Varnishes are the result of years—a lifetime, in fact, of learning how to make Varnishes—of a long experience in a practical way. Users of "Little Blue Flag" Varnishes get the benefit of this knowledge. They get what is even more valuable, an assurance of satisfaction, value received, and highest quality with every can.

Don't think because it is possible to buy varnishes a few cents cheaper, that the cost is less. Dependable varnishes like dependable paints—Lowe Brothers "High Standard Paints"—are always most economical. This is of moment to the architect and the painter as well as to owners and builders of houses.

So remember to specify "Little Blue Flag" Varnishes. Write for Booklets and Varnish Catalogue. Also see Sweet's Index, pages 1378 and 1379.

The Lowe Brothers Company.

Paintmakers—Varnishmakers
450-452 E. Third St. Dayton, O.
New York Chicago Kansas City



Your Reputation



depends on the strength and beauty of your work. In building the modern store front, no other system insures these necessary elements like the Petz system.

It gives the maximum of light and display room with unquestioned strength, quickness of installation, and ease in setting and removing glass. Its quality has been proved by experience.

You can get complete information about the Petz system on request. Our booklet "Modern Store Fronts" fully illustrates and describes our different forms of bars. Write for it today.

DETROIT SHOW CASE COMPANY

Sole Makers
491 West Fort Street Detroit, Mich.
For sale by Pittsburg Plate Glass Co., at all branches.



WRITE to us for preliminary opinions on all legal matters. No charge unless retained. Associates throughout Continental Europe, Great Britain, the Colonies, South America and Canada enable us to investigate and prosecute foreign interests with dispatch. Our Pamphlet for the Asking.

THE INDUSTRIAL LAW LEAGUE, Inc., 170 Broadway, New York City, New York

ESTABLISHED 1884

THE E. J. JOHNSON CO.

38 PARK ROW
New York

Slate Blackboards

Producers of

Branch Office
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Large Stocks

Prompt Shipments

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ROOFING SLATE



Some Ceiling Facts

Whether you want a ceiling to be fireproof, artistic, sanitary, modern, durable or inexpensive, you cannot possibly do better than use **Eller's Stamped Metal Ceilings** because every one of the above features are embodied.

Every room fitted with this most modern ceiling looks good. Doesn't matter what the shape is. Nook and crook look as good, and are practically as easy to arrange, as a perfectly square ceiling.

In **Eller's Ceilings** the modeler's skill has produced patterns that please the eye and harmonize with the classical arts and make lasting beauty. After the modeler has done his part, the experienced mechanic steps in and brings the manufacturing end to mechanical perfection. The combination produces a ceiling incomparably beautiful, of wonderful durability, and one that is easily fitted.

Eller Steel Ceilings
Are the Most Modern, Sanitary and Inexpensive. They Practically Last Forever

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CANTON, OHIO, U. S. A.

work. The back door consists of one casting instead of two. One of the most important changes is the pallet adjustment feature. An eccentric arrangement is employed which allows for the use of pallets, either wood or iron, varying in thickness. Where wooden pallets are used it is sometimes necessary to use boards that are warped more or less and the machine will handle them without any inconvenience whatever.

There are very few parts to it considering it is adjustable for making stone 4, 6, 8, 10, 12, 16, 20 and 24 inches long and 4, 6, 8, 10, and 12 inches wide. It is very simple, strongly built and will withstand the most severe automatic tamper without being driven out of square.

The stones are molded face down and a very wet mixture can be handled successfully. The last mentioned feature is excellent because blocks should be made with plenty of water to properly crystallize the cement. Further,



a dense stone has considerable more strength than one full of voids or made dry.

The No. 5 is offered at reasonable prices and in combinations according to the buyer's requirements. Interested parties would do well to write for complete information, because there is no question but their system is right for making the best possible kind of concrete stone.

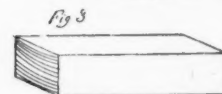
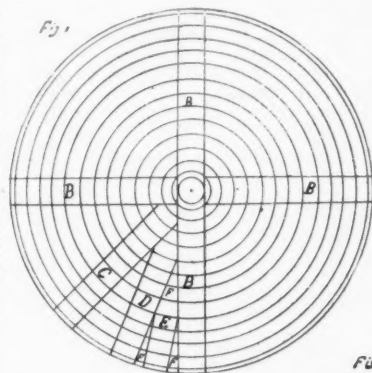
The Miles Company in addition to their block machinery offer a first-class line of other concrete machinery, such as adjustable Sill, Cap and Step Molds, Fancy Molds, Tile Molds, Mixers, Hoists, etc.


Cutting Beech Plane-Stocks

Plane-makers are usually glad to get good white, straight-grained beech, for plane-stocks. One concern, the Gage Tool Company, Vineland, N. J., has repeatedly advertised in this journal for such wood.

The accompanying engraving shows the method of sawing plane-stocks from the log, as used by that company. Fig. 1 represents the end of a beech or apple wood log, from which are sawed $3\frac{1}{2}$ or 4 inch planks, represented by B, taken at right angles from each other. The remaining triangular shaped pieces are then sawed into planks as represented by C D, and E F representing a portion of the waste.


B, Fig. 2, represents one of the planks as it appears after removing from the log, before sawing into stocks, with the circles of annular growth as near as possible at right angles to the sides of the plank. Fig. 3 represents a plane-stock as sawed from B, Fig. 2. Fig. 4 shows the end of the plane-stock, with its circles of annular growth parallel with top and bottom of plane, and at right angles to its sides. For planes





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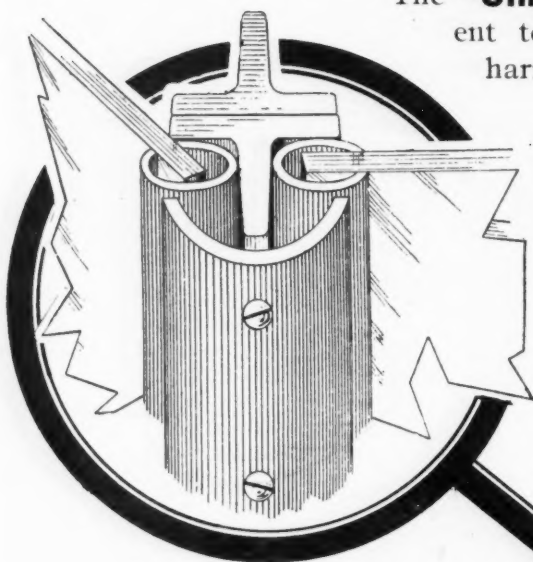
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only the white or sap portion of white beech is used. Apple wood also is used. An immense amount of beech and apple wood goes to waste every year, which might be turned to a better use. The waste in sawing logs for plane-stocks is just as valuable for firewood as would be the whole log sawed up. Slabs from beech logs where thick enough, are just as valuable for planes—in fact, more so—than any other part of the timber. Near the butt part of the tree the growth is rapid, and here the slab is thickest, and from this part comes the best plane-stocks.

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The life and soul of any roofing is the saturating and coating compound.

To make a roofing that will be durable under all conditions of weather and temperature, this compound must be absolutely unaffected by extremes of heat and cold, drought and moisture. It must not soften under the heat and cold, drought and moisture. It must not soften under the heat of the sun. If it does, the roof will sag and drip. It must not evaporate, either by heat or wind. That would leave behind only the skeleton. It must not absorb moisture, or it will freeze, become brittle and crack in cold weather and then crumble later.

Vulcanite is the only substance known which fully and perfectly meets all of these requirements. Vulcanite is a "mineral rubber" which exists naturally in certain sections of Utah, and is dug out of the earth in the same way that coal is mined, and costs \$100.00 per ton.

This high price paid for the raw material is fully justified by the results—it gives a roof which will not soften nor evaporate in summer; which will not freeze and crack in winter; which will not crumble in dry weather; and which absolutely refuses to leak in wet weather.

Do you think these statements are rather strong?

Don't take our word for it; test it yourself.

Lay a piece of Vulcanite on a hot steam pipe or radiator for twelve hours; if it melts or evaporates—don't buy it.

Put a sample of it on ice, or expose it to a zero temperature; if it becomes brittle, if you can break it like glass—don't buy it.

Soak it in water over night; if it absorbs moisture—don't buy it.

Immerse it in acid; if it is affected in any way—don't buy it.

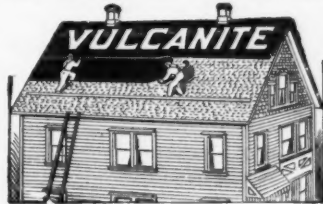
Lay a glowing coal on it; if it takes fire—don't buy it.

We will trust Vulcanite to stand the test.

A roofing which will not stand these tests is doubtless made from petroleum pitch, a material which can be bought for \$15.00 to \$16.00 a ton. A roof built of such material requires painting every year or two. And while it may be bought for a trifle less than Vulcanite, it will in the end cost much more and be worth much less.

Each square of Vulcanite contains 108 square feet; the extra eight feet providing for laps, so that each square of roofing gives 100 square feet of finished roof. The cement and nails necessary to lay it are enclosed in each roll.

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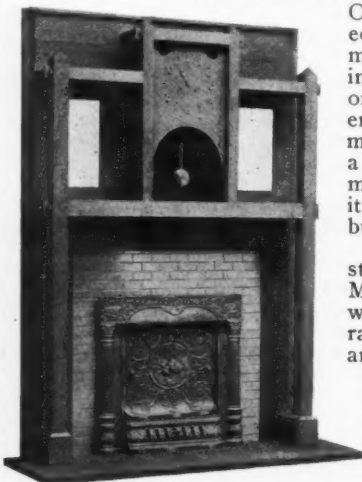
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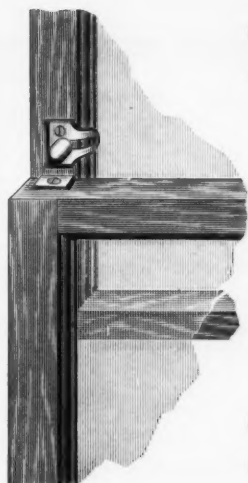
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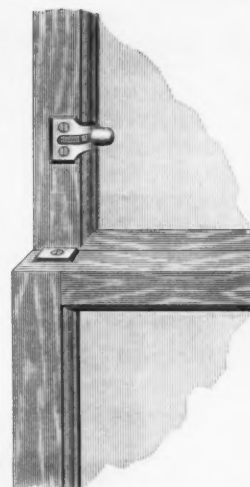
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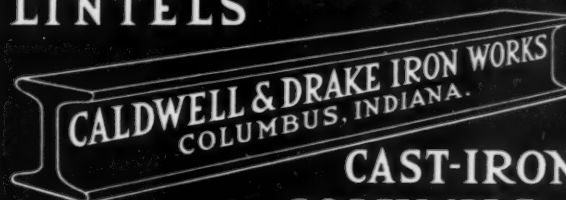
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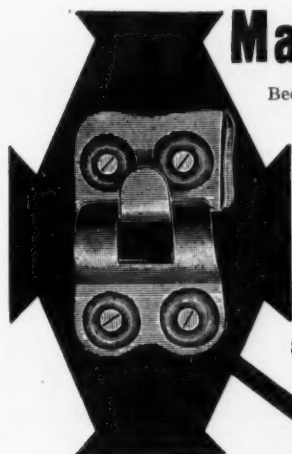
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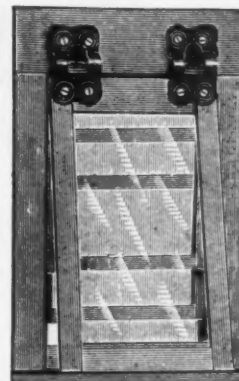
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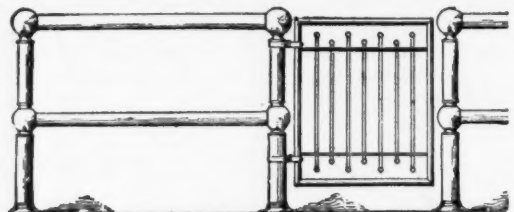
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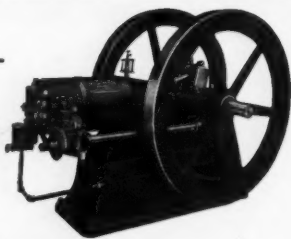


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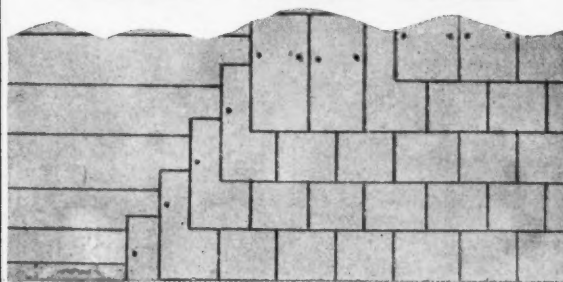
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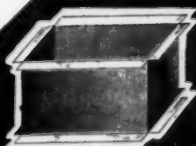


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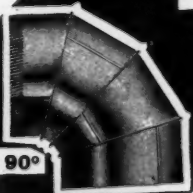
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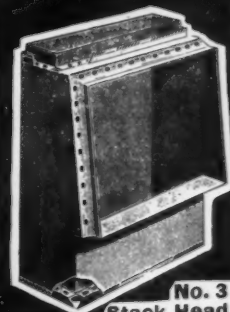
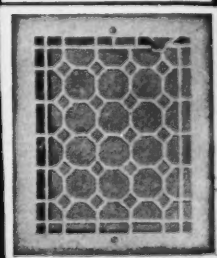


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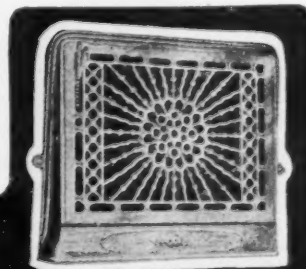
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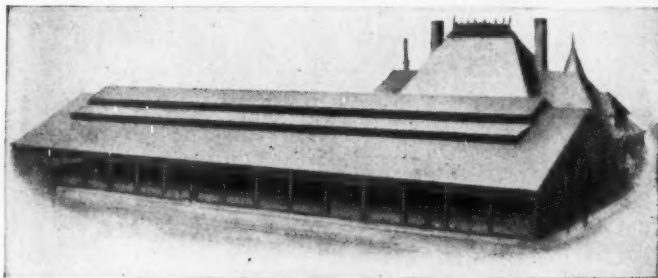
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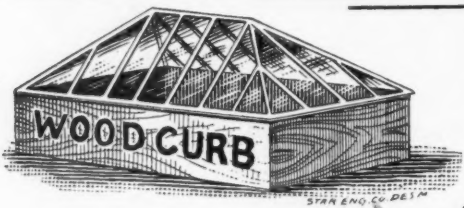
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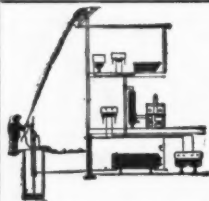
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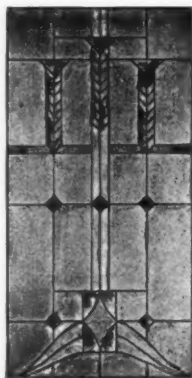
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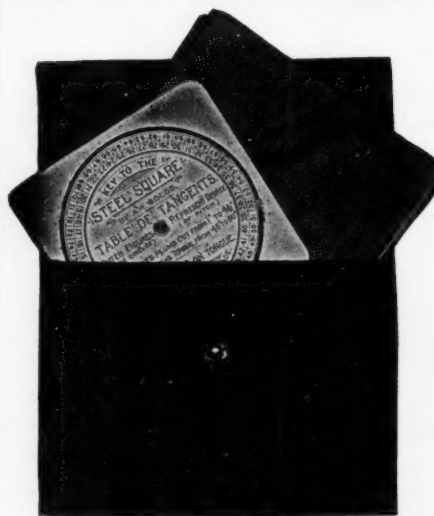
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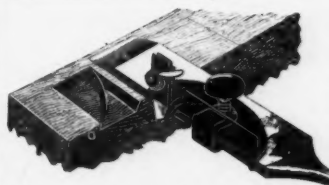
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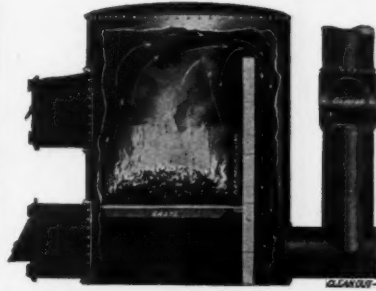
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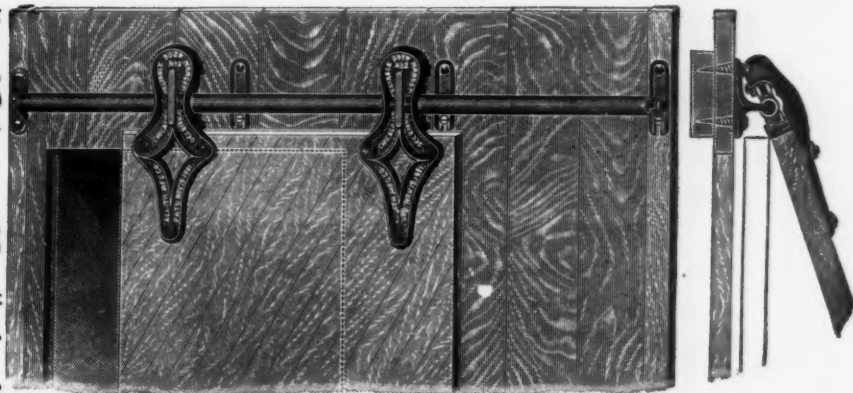
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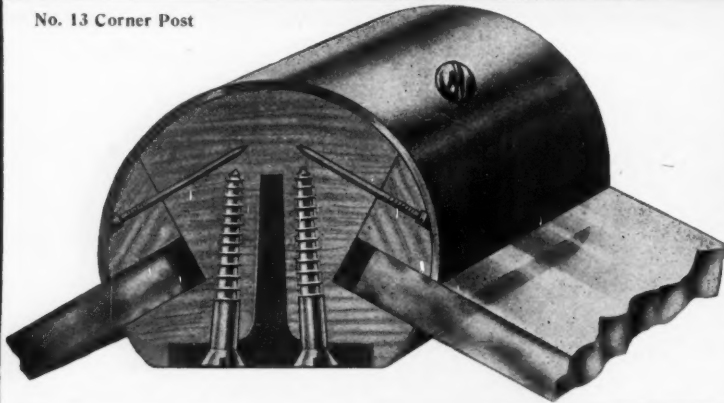
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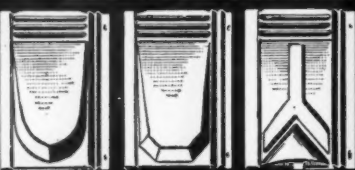
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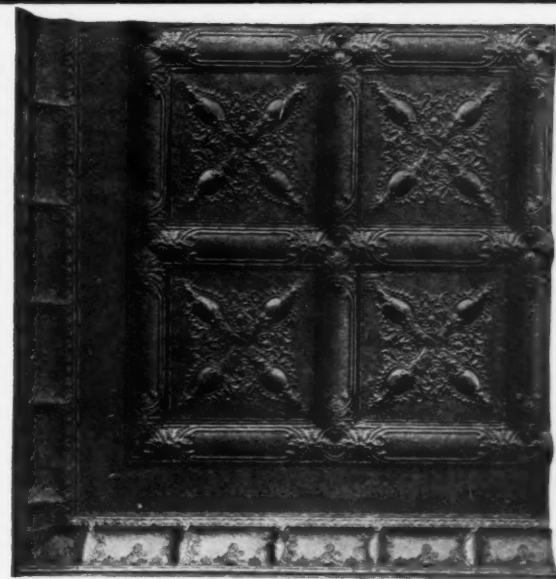
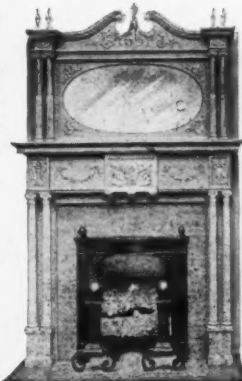
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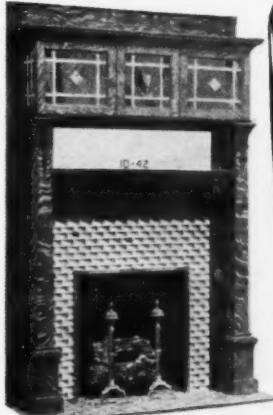
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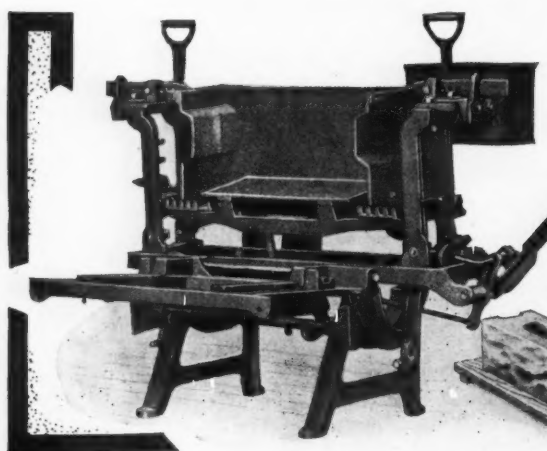
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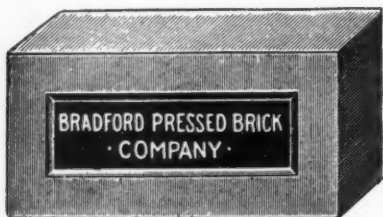
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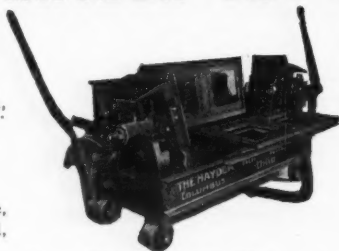
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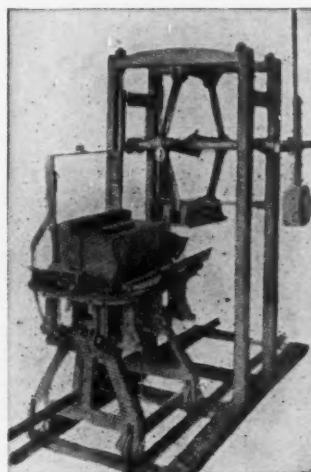
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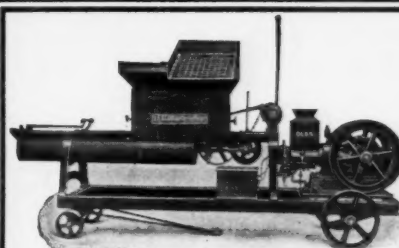
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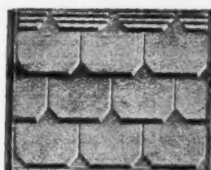
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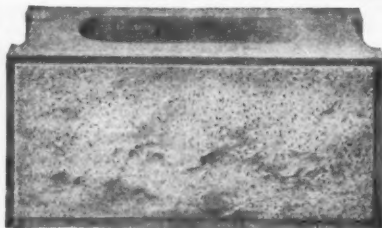
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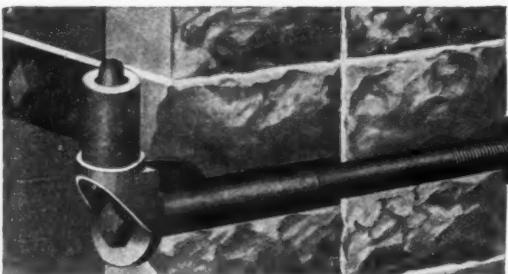
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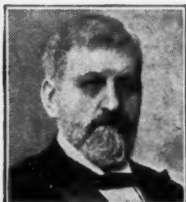
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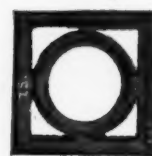
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NOTICE TO ADVERTISERS

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 188 Jackson Boulevard, Chicago, not later than September 20 in order to insure insertion in the October number.

INDIA OILSTONES

Mr. Carpenter—

We want you to know the India as we know it. We know that when you are convinced that it will sharpen your tools quicker, set a better edge, wear longer, and is in every way more efficient than other oilstones—you will use it and no other. Let us prove these statements to you. We unconditionally guarantee the India to do what we claim for it.

We Take the Risk—You Get Results

No Matter
What the
Tool, There is
an India to
Sharpen It.



It Cuts
Metal on
Which a File
Will Slip.

India Trade Mark

If your dealer does not have the size and grit you want send to us. We recommend our Medium India No. 1½ 7x2x1 inch, for \$1.00 postpaid—or our Combination of same size for \$1.25 postpaid. The Combination Stone has one side coarse for fast rough work and the other medium to set a nice working edge.

Send for complete illustrated price list.

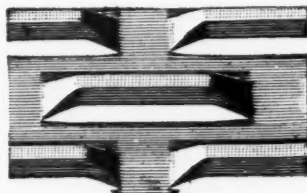
Sole Selling Agents

Pike Manufacturing Co.

PIKE, N. H. Dept. 6.

NORTON COMPANY, Worcester, Mass., Mfrs.

SYKES METAL LATH



The lath that is positively different to anything else made, different because it combines more good features.

Cup lath is the only Expanded Metal Lath

that can be plastered on either side—cannot be applied wrong because both sides

are alike.

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust.

Requires no furring out from studs because it is self furring.

It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country.

In fact when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.

NILES, OHIO



ROENIUS == WOOD and COAL == CHUTES



CLOSED AND LOCKED

**10,000
in use**

Have stood the test, because they are of good, common sense construction. They **do the work and stand the abuse** Coal Chutes are intended for. No adjustable parts, easily opened, easily locked. Notice long anchorage and long spout on both Chutes. Write for agency and prices.

Grand Rapids Foundry Co.
Grand Rapids, Wisconsin



CLOSED AND LOCKED

The **WINTHROP** **Asphalt Shingle**



A SOLID TAPERED

Asphalt Shingle

Cool, Gray, Slate Color

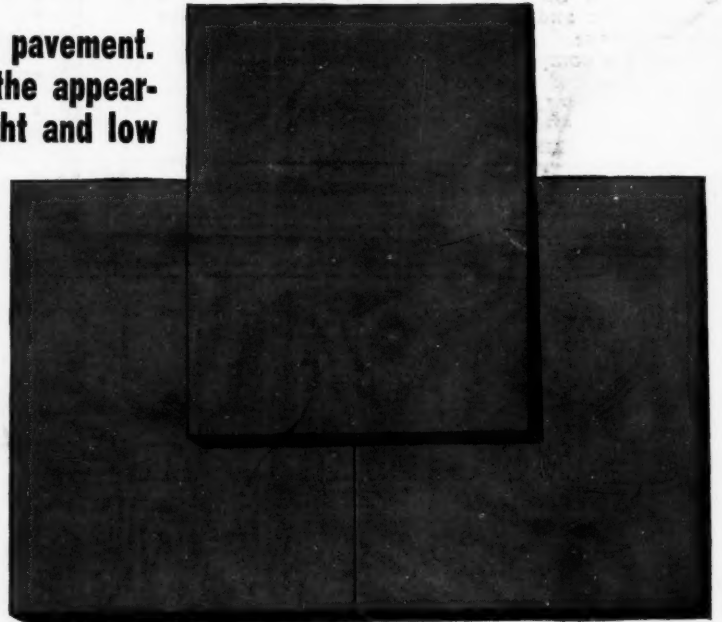
Indestructible as an asphalt pavement.
All the durability of asphalt, the appearance of slate, the light weight and low cost of wood shingles.

Winthrop Asphalt Shingles are laid with regular shingle nails the same as wood shingles.

Cross section, Showing Butt End of Shingle

These shingles are fire-resisting, weather proof, wind and sun proof and never require painting.

No Cement or Dope Required to Lay These Shingles



Photograph—Looks Like Slate

Contractors! Builders! Owners!

This is a Residence Roofing. Can be Applied on a Building at About the Cost of Wood Shingles

Not another roofing in existence can show such real advantage. None can offer such material—such wearing qualities at such a price.

It is a substitute for slate—possesses just as much durability just as good an appearance, but is far less trouble to lay, is far lighter in weight and costs considerably less. No experienced labor or special tools required. Anybody that can put on wood shingles can lay the Winthrop Shingle.

It is a substitute for wood shingles—weighs less, and lasts five times as long. Never requires painting or attention of any kind. Can be applied on a building at about the same price as wood shingles.

The remarkable durability which has made asphalt universally used for paving and other purposes is even increased by our method of manufacturing Winthrop Asphalt Shingles.

Special Inducements Offered For Applying First Roof of These Shingles in Each Town.

**WRITE TODAY FOR
FREE BOOKLET**

WINTHROP ASPHALT SHINGLE CO.

**1102 WOMAN'S TEMPLE
CHICAGO**

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